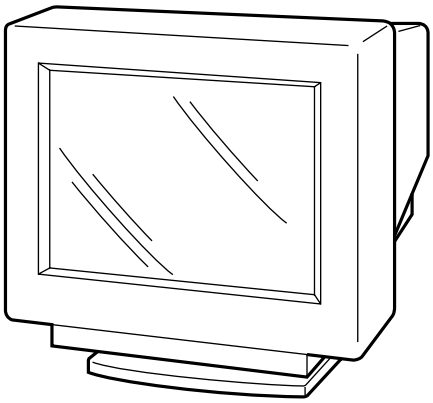
MCM 21T1

SERVICE MANUAL

AEP Model

Chassis No. SCC-L04S-A



N3 CHASSIS

SPECIFICATIONS

Dimensions and weight	
CRT:	50 cm (21")
Visible diagonals:	50 cm
Dot pitch:	0.25-0.27 mm
Maximal resolution:	1600 x 1200 pixels
Preset display area:	388 mm x 291 mm
Dimensions (W x H x D):	498 mm x 505 mm x 474 mm
Weight:	31 kg
Accessories:	power cable (1,8 m)
	data cable (1.8 m)
Storable display modes:	24 (9 of which are preset)
Electrical data	
Video:	analog, positive, 0.7 V_{pp}, 75 Ohm
Synchronization:	separate sync. TTL
	composite sync. TTL/ sync. on green
Line frequency:	30 kHz .... 107 kHz (multi-scanning)
Refresh rate:	48 Hz .... 160 Hz
Maximum pixel rate:	229 MHz
Power supply:	switches automatically
	90 V - 132 V, 50 Hz - 60 Hz ± 3 Hz, < 2 A typ. at 110 V
	180 V - 264 V, 50 Hz - 60 Hz ± 3 Hz, < 1 A typ. at 220 V
Power consumption:	< 160 W (ON, Normal mode)
(see power management):	< 100 W (Standby mode) < 15 W (Suspend mode) < 5 W (OFF mode)
Environmental conditions	
Environment class 3K2, IEC 721	
Rated range of operation: Humidity:	15 °C .... 35 °C 20 % .... 85 %
Limit range of operation: Humidity:	5 °C .... 40 °C 20 % .... 85 %
Condensation must be avoided.	

COLOR Monitor

SIEMENS NIXDORF

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC Leakage. Check leakage as described below.

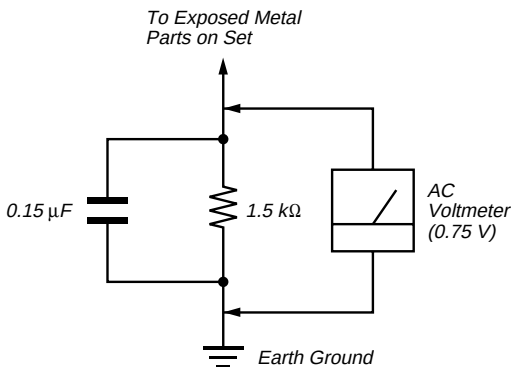
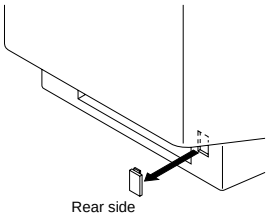


Fig. A. Using an AC voltmeter to check AC leakage.

CAUTION ON DAS (ECS) CONNECTOR

- The connector for DAS (ECS) adjustment is provided inside the cover shown below. Be careful with an electrical shock when connecting the connector with the power supplied. Also, return the removed cover to the home position.



LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers).

Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOMs that are suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

WARNING!!

NEVER TURN ON THE POWER IN A CONDITION IN WHICH THE DEGAUSS COIL HAS BEEN REMOVED.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

POWER SAVING FUNCTION

This monitor meets the power-saving guidelines set by VESA and Energy Star, as well as the more stringent NUTEK .
If the monitor is connected to a computer or video graphics board that is VESA DPMS (Display Power Management Signaling) compliant, the monitor will automatically reduce power consumption in three stages as shown below.
You can set the delay time before the monitor enters the power saving mode using the OSD. Set the time according to "Setting the power saving delay time".

Note
If no video signal is input to the monitor, the "NO INPUT SIGNAL" message appears. After the delay time has passed, the power saving function automatically puts the monitor into the active-off mode and the indicator lights up orange. Once the horizontal and vertical sync signals are detected, the monitor automatically resumes its normal operation mode.

	Power consumption mode	Screen	Horizontal sync signal	Vertical sync signal	Power consumption	Recovery time	⏻ indicator
1	Normal operation	active	present	present	≤ 160 W	—	Green
2	Standby (1st mode)	blank	absent	present	≤ 100 W	Approx. 3 sec.	Green and orange alternate
3	Suspend (2nd mode)	blank	present	absent	≤ 15 W	Approx. 3 sec.	Green and orange alternate
4	Active-off (3rd mode)	blank	absent	absent	≤ 5 W	Approx. 10 sec.	Orange
5	Power-off	—	—	—	0 W	—	Off

DIAGNOSIS

Failre	Power LED
+B failure	Orange (0.5 sec) → Off (0.5 sec)
Horizontal / Vertical Deflection failure, Thermal protector	Orange (1.5 sec) → Off (0.5 sec)
ABL protector	Orange (0.5 sec) → Off (1.5 sec)
HV failure	Orange (0.25 sec) → Off (0.25 sec) → Orange (0.25 sec) → Off (1.25 sec)
Aging / Self Test	Orange (0.5 sec) → Off (0.5 sec) → Green (0.5 sec) → Off (0.5 sec)

Aging Mode (Video Aging) : During Power Save, press "MENU" key for longer than 2 second.
Self Test (OSD Color Bar) : During Power Save, press "CONTRAST" + (➡) key for longer than 2 second.
Reliability Check Mode : During Power Save, press "CONTRAST" – (⬅) key for longer than 2 second.

TIMING SPECIFICATION

MODE AT PRODUCTION	MODE 1		MODE 2						MODE 3	
MODE FOR CUSTOMER	VGA	E-VGA	VGA	VESA	VESA	SNI-100Hz	VESA	VESA	SNI-100Hz	MGA
RESOLUTION	720 X 400	720 X 400	640 X 480	640 X 480	640 X 480	640 X 480	800 X 600	800 X 600	800 X 600	800 X 600
CLOCK	28.325 MHz	36.082 MHz	25.175 MHz	31.500 MHz	36.000 MHz	40.500 MHz	49.500 MHz	56.250 MHz	67.500 MHz	81.000 MHz
— HORIZONTAL —										
H-FREQ	31.472 kHz	37.822 kHz	31.469 kHz	37.5 kHz	43.269 kHz	50.625 kHz	46.875 kHz	53.674 kHz	63.92 kHz	76.705 kHz
	usec	usec	usec	usec	usec	usec	usec	usec	usec	usec
H. TOTAL	31.774	26.44	31.778	26.667	23.111	19.753	21.333	18.631	15.644	13.037
H. BLK	6.355	6.485	6.356	6.349	5.333	3.951	5.172	4.409	3.793	3.16
H. FP	0.635	0.748	0.636	0.508	1.556	0.395	0.323	0.569	0.474	0.395
H. SYNC	3.813	1.247	3.813	2.032	1.556	1.58	1.616	1.138	0.948	1.185
H. BP	1.906	4.49	1.907	3.81	2.222	1.975	3.232	2.702	2.37	1.58
H. ACTIV	25.419	19.955	25.422	20.317	17.778	15.802	16.162	14.222	11.852	9.877
— VERTICAL —										
V. FREQ(HZ)	70.094 Hz	84.236 Hz	59.94 Hz	75 Hz	85.008 Hz	100.049 Hz	75 Hz	85.061 Hz	100.032 Hz	120.038 Hz
	lines	lines	lines	lines	lines	lines	lines	lines	lines	lines
V. TOTAL	449	449	525	500	509	506	625	631	639	639
V. BLK	49	49	45	20	29	26	25	31	39	39
V. FP	13	9	10	1	1	1	1	1	1	2
V. SYNC	2	3	2	3	3	3	3	3	3	3
V. BP	34	37	33	16	25	22	21	27	35	34
V. ACTIV	400	400	480	480	480	480	600	600	600	600
— SYNC —										
INT(G)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EXT(H/V)/POLARITY	YES N/P	YES N/P	YES N/N	YES N/N	YES N/N	YES N/N	YES P/P	YES P/P	YES P/P	YES N/N
EXT(CS) /POLARITY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
INT/NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT
SIZE(21")	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm	388x291 mm

MODE AT PRODUCTION	MODE 4				MODE 5	MODE 6	MODE 7	MODE 8		MODE 9
MODE FOR CUSTOMER	VESA	SNI-100Hz	MGA	VESA	SNI-110Hz	VESA	VESA	SNI-100Hz	VESA	VESA
RESOLUTION	1024 X 768	1024 X 768	1024 X 768	1152 X 864	1152 X 864	1280 X 1024	1280 X 1024	1280 X 1024	1600 X 1200	1600 X 1200
CLOCK	94.5 MHz	111.2 MHz	131 MHz	108 MHz	157 MHz	135 MHz	157.5 MHz	184.9 MHz	202.5 MHz	229.5 MHz
— HORIZONTAL —										
H-FREQ	68.677 kHz	80.814 kHz	97.47 kHz	67.5 kHz	100.128 kHz	79.976 kHz	91.146 kHz	107 kHz	93.75 kHz	106.25 kHz
	usec	usec	usec	usec	usec	usec	usec	usec	usec	usec
H. TOTAL	14.561	12.374	10.26	14.815	9.987	12.504	10.971	9.346	10.667	9.412
H. BLK	3.725	3.165	2.443	4.148	2.65	3.022	2.844	2.423	2.765	2.44
H. FP	0.508	0.288	0.244	0.593	0.204	0.119	0.406	0.173	0.316	0.279
H. SYNC	1.016	1.151	0.977	1.185	0.815	1.067	1.016	0.692	0.948	0.837
H. BP	2.201	1.727	1.221	2.37	1.631	1.837	1.422	1.558	1.501	1.325
H. ACTIV	10.836	9.209	7.817	10.667	7.338	9.481	8.127	6.923	7.901	6.972
— VERTICAL —										
V. FREQ(HZ)	84.997 Hz	99.894 Hz	120.334 Hz	75 Hz	110.03 Hz	75.025 Hz	85.024 Hz	99.91 Hz	75 Hz	85 Hz
	lines	lines	lines	lines	lines	lines	lines	lines	lines	lines
V. TOTAL	808	809	810	900	910	1066	1072	1071	1250	1250
V. BLK	40	41	42	36	46	42	48	47	50	50
V. FP	1	2	2	1	2	1	1	2	1	1
V. SYNC	3	3	3	3	3	3	3	3	3	3
V. BP	36	36	37	32	41	38	44	42	46	46
V. ACTIV	768	768	768	864	864	1024	1024	1024	1200	1200
— SYNC —										
INT(G)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EXT(H/V)/POLARITY	YES P/P	YES N/N	YES N/N	YES P/P	YES N/N	YES P/P	YES P/P	YES P/P	YES P/P	YES P/P
EXT(CS) /POLARITY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
INT/NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT	NON INT
SIZE(21")	388X291 mm	388X291 mm	388X291 mm	388X291 mm	388X291 mm	364X291 mm	364X291 mm	364X291 mm	388X291 mm	388X291 mm

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Note: Hand degauss must be used on stand-by or power-off condition.
This model has an automatic earth magnetism correction function by using an earth magnetism sensor and a LCC coil. When using a hand degauss while monitor (LCC coil) is being operated, it sometimes gets magnetized, and the system may not work properly as a result.

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

SECTION 1
GENERAL

Introduction

Your new MCM 21T1 monitor supplies you with a high-quality color image with high resolution and ergonomic refresh rates. It possesses a whole range of useful features and functions, e. g.:

- 21" (50 cm) high-resolution Trinitron CRT (0.25 - 0.27 mm dot pitch)
- automatic scanning of all horizontal frequencies from 30 to 107 kHz and all refresh rates (vertical frequencies) from 48 to 160 Hz
- digital screen controller with microprocessor for storing 24 different display modes
- freely adjustable color alignment for matching the screen colors to the colors of various input and output devices
- VESA-DDC compatibility
- power management for reducing power consumption by up to 95% when the PC system is not in use
- compliance with the latest ergonomic standards (ISO 9241-3)
- compliance with the recommendations in accordance with TCO '95

This Operating Manual contains important information you require to start up and run your monitor. The monitor works together closely with the screen controller (graphics card) of your PC. It processes the data supplied to it by the screen controller. The screen controller/the associated driver software is responsible for setting the modes (resolution and refresh rate).

Target group

You don't need to be an "expert" to perform the operations described here. Do, however, read the chapter with the important notes in the Operating Manual of your PC and in this Operating Manual.

In the event of any problems occurring, please contact your sales office or our service center.

Further information

Details of how you set the resolution and refresh rate are provided in the documentation on your screen controller/the associated driver software.

Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:

Pay particular attention to texts marked with this symbol. Failure to observe this warning endangers your life, destroys the device, or may lead to loss of data.

This symbol is followed by supplementary information, remarks and tips.

► Texts which follow this symbol describe activities that must be performed in the order shown.

"Quotation marks" indicate names of chapters and terms that are being emphasized.

1-1

Important notes

In this chapter you will find information regarding safety which is essential to take note of with your monitor.

The chapter also contains information on the licenses issued for your equipment.

Safety

This device complies with the relevant safety regulations for data processing equipment, including electronic office machines for use in an office environment. If you have any questions, contact your sales office or our customer service.

- If the device is brought into the installation site from a cold environment, condensation can form. Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site.
- During installation and before operating the device, observe the instructions on environmental conditions in the chapter entitled "Technical data" as well as the instructions in the chapter "Installing an ergonomic video workstation".
- To ensure adequate ventilation the monitor may only be operated with the monitor foot installed.
- The color monitor must not be exposed to strong magnetic fields (e. g. caused by magnetic paper clip holders or loudspeakers). Strong magnetic fields could result in a permanent blotchy image.
- The monitor is automatically degaussed when switched on. This results in a magnetic field around the metal edge of the picture tube, which may damage the data on data carriers nearby. Therefore, never keep magnetic data carriers near the monitor.
- The device automatically sets itself to the correct voltage within the range from 100 V to 120 V and 200 V to 240 V. Ensure that the local mains voltage lies within these limits.
- The device must be installed in such a way that the user has good access to the appliance socket.
- The ON/OFF switch does not disconnect the device from the line voltage. To disconnect the line voltage completely, remove the power plug from the grounded power outlet.
- Lay all cables so that nobody can stand on them or trip over them. When attaching the device, observe the relevant notes in the chapter "Connecting the monitor".
- If you use a different data cable from the one supplied, ensure that it is adequately shielded. CE conformance and optimum picture quality are guaranteed only if you use the data cable supplied.
- No data transmission cable should be connected or disconnected during a thunderstorm.
- Please ensure that no objects (e. g., necklaces, paperclips etc.) or liquids can get into the interior of the device (electrical shock, short circuit).
- In emergencies (e. g. damaged casing, elements or cables, penetration of liquids or foreign matter), switch off the unit, disconnect the power plug and contact your sales office or our customer service.
- Only qualified technicians may repair the device. Unauthorized opening or incorrect repair may greatly endanger the user (electric shock, fire risk).

- Tampering with the device, in particular adjusting the high voltage or installing a different type of CRT tube, may result in a large amount of X-ray radiation being emitted. Devices modified in this way no longer comply with their license and may not be used.
- You may set only those resolutions and refresh rates specified in the "Technical data" chapter. Otherwise you may damage your monitor. If you are in any doubt, contact your sales office or customer service.
- Keep this Operating Manual together with your device. If you pass on the device to third parties, you should also pass on this manual.

Cleaning note

Always pull out the power plug before you clean the monitor.

Do not clean any interior parts yourself, leave this job to a service technician.

Do not use any cleaning agents that contain abrasives or may corrode plastic.

Ensure that no liquid will run into the system.

Ensure that the ventilation areas of the monitor are free.

When cleaning the surface of the screen, always use a soft, slightly damp cloth in order to avoid scratching the glass.

Wipe the monitor housing with a dry cloth. If the monitor is particularly dirty, use a cloth which has been moistened in mild domestic detergent and then carefully wrung out.

Transport notes

The monitor weighs more than 30 kg. Get a second person to help you lift and carry it.

When transporting the monitor ensure that it is not exposed to strong magnetic fields.

Transport the monitor with care and only in its original packaging or another corresponding packaging fit to protect it against knocks and jolts.

Above all, never drop the monitor. If the CRT is damaged, there is a danger of implosion!

Manufacturer's notes

ENERGY STAR

The Siemens Nixdorf multiscan color monitor MCM 21T1 is designed to conserve electricity by dropping to less than 15 W when it goes into suspend mode and to less than 5 W when it goes into OFF mode. With this new power management the MCM 21T1 qualifies for the U.S. Environmental Protection Agency's (EPA) ENERGY STAR Computers award.

The EPA estimates that computer equipment uses 5 percent of all business electricity and it is growing rapidly. If all desktop PCs and peripherals enter a low-power mode when not in use, the overall savings in electricity could amount to $ 2 billion annually. These savings could also prevent the emission of 20 million tons of carbon dioxide into the atmosphere - the equivalent of 5 million automobiles.

As an ENERGY STAR Partner, Siemens Nixdorf Informationssysteme AG has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

CE certificate

This device complies with the requirements of the EEC directive 89/336/EEC "Electromagnetic compatibility" and 73/23/EEC "Low voltage directive" with amending directive 93/67/EEC.

Note on RFI suppression

All other devices connected to this product must have RFI suppression in accordance with EEC directive 89/336/EEC. Products meeting these requirements are accompanied by a certificate issued by the manufacturer and carry the CE symbol.

Note on X-ray radiation

This device complies with the German X-ray regulations (Röntgenverordnung - RöV). The local dosage emitted is less than 1 µSv/h (micro-Sievert per hour) at a distance of 0.1m.

FCC Class B Compliance Statement

If there is an FCC statement on the device, then:
The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

This equipment has been tested and found to comply with the limits for a "Class B" digital device, pursuant to Part 15 of the FCC rules and meets all requirements of the Canadian Interference-Causing Equipment Regulations. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in strict accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Siemens Nixdorf Informationssysteme AG is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Siemens Nixdorf Informationssysteme AG. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC rules.

Important note on power cable

To guarantee safe operation, use the cable supplied. Use the following guidelines if it is necessary to replace the original cable set.

- The female/male receptacles of the cord set must meet CEE-22 requirements.
- The cable has to be HAR-certified or VDE-certified. The mark HAR or VDE will appear on the outer sheath or on the insulation of one of the inner conductors.
- For devices which are mounted on a desk or table, type SVT or SJT cable sets may be used. For devices which sit on the floor, only SJT type cable sets may be used.
- The cable set must be selected according to the current rating for your device.

Power cable for devices distributed in the US and Canada

In the United States and Canada the cord set must also be UL-listed and CSA-labelled. The voltage rating should be min. 250 volts a.c.

Please consult the following table for the selection criteria for power cables used in the United States and Canada.

Cable type	Size of conductors in cable	Maximum current rating of the device
SJT	18 AWG 16 AWG 14 AWG	10 Amps 12 Amps 12 Amps
SVT	18 AWG 17 AWG	10 Amps 12 Amps

For the United Kihgdom

Should the plug on the flexible cord not be of the type for your socket outlets, do not use an adapter but remove the plug from the cord and discard. Carefully prepare the end of the supply cord and fit a suitable plug.

WARNING

THIS APPLIANCE MUST BE EARTHED

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green and Yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured Green or Green and Yellow.
- The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black.
- The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Red.

Disposal and recycling

This device has been manufactured to the greatest possible degree from materials which can be recycled or disposed of in a manner that is not environmentally damaging.

The device is taken back after use, so that it can be recycled, provided that it is returned in a condition which is the result of normal use. Any components not recuperated will be disposed of in an environmentally acceptable manner.

We herewith declare that it will be possible to repair any device marked with the eco-label for at least 5 years after production of that device has discontinued.

If you have any questions on disposal, please contact your local office, our service department, or, directly:

Siemens Nixdorf Informationssysteme AG
Recycling Center
D-33094 Paderborn
Tel.: ++ 49 5251 - 81 80 13 / Fax: ++ 49 5251 - 81 80 15

Checking the contents of the consignment

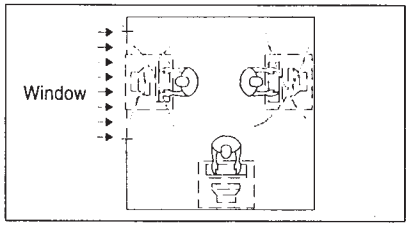
- ► Unpack all the individual parts.
- ► Remove any plastic caps from the plugs for the cables in the consignment.
- ► Check the delivery for damage incurred during transport.
- ► Check whether the delivery agrees with the details in the delivery note.
  The complete shipment comprises:
  - one monitor
  - one data cable (D-SUB)
  - one power cable
  - a Guarantee Booklet
  - this Operating Manual

Should you discover that the delivery does not correspond to the delivery note, notify your local sales office immediately.

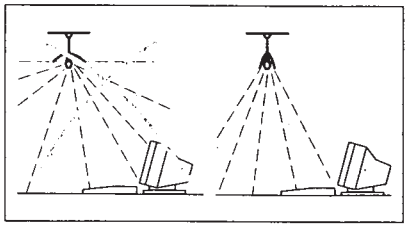
i It is recommended not to throw away the original packing material. Keep it for future transportation of the drive.

Installing an ergonomic video workstation

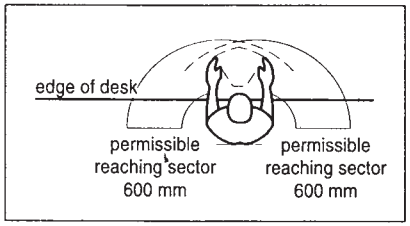
Before you set up your equipment you should select a suitable position for working at the monitor. Please observe the following advices when installing a video workstation.



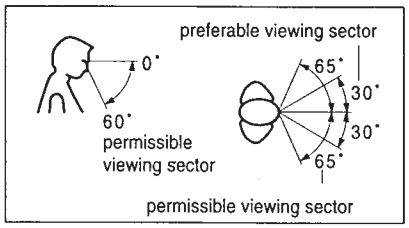
Avoid direct and reflected glare.



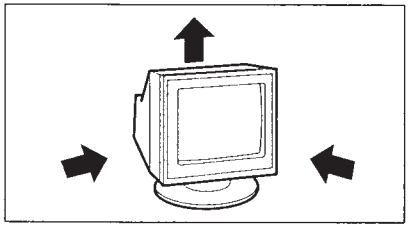
Avoid glare from electric lighting.



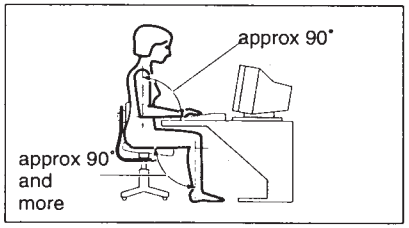
Position the keyboard where it is easiest to reach.



Position the monitor for optimum viewing. The viewing distance to the monitor should be approximately 50 cm.



Keep ventilated areas clear.



Remember to maintain correct posture.

1-4

Connecting the monitor

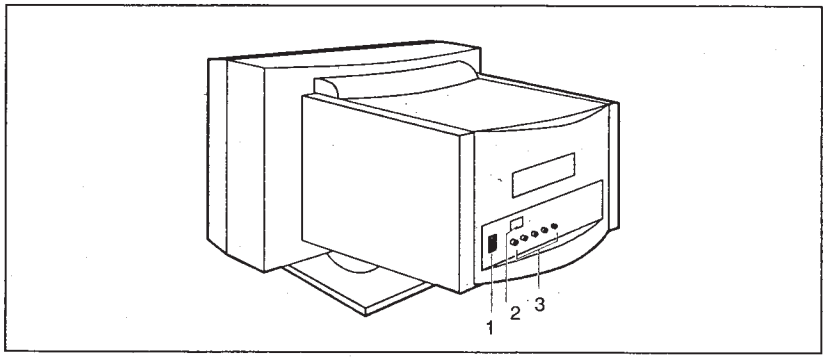
See your PC's operating manual for details of the ports on the system unit.

Please note the information provided in the chapter "Important notes" at the beginning of this Operating Manual.

Do not cover the ventilation openings of the monitor.

If you are assembling monitors beside each other, there must be a minimum distance of 30 cm between monitors of the same constructional type, to avoid image distortion. With different monitors, the distance must be increased, if necessary.

Because of its weight, the monitor must be placed on a stable surface. Do not place the monitor on your system unit.



1 = Power connector
2 = D-SUB connector (15-pin)
3 = BNC connectors

► Be sure that the monitor and the system unit are switched off.

The system unit's power plug must be pulled out!

The data cable supplied has two 15-pin D-SUB connectors for connection to the monitor and to the system unit.

CE conformance and optimum picture quality are guaranteed only if you use the data cable supplied.

► Connect one of the connectors of the data cable to the D-SUB connector on the monitor (2) and secure the connector by tightening the safety screws.

If you use a data cable with BNC connectors instead of the supplied data cable, you should perform the following step:

► Connect the BNC connectors of the data cable to the appropriate BNC connectors on the monitor (3), correct order from left to right: Red-Green-Blue-HD-VD, and secure the connectors by locking the bayonet catches.

If, in addition to the data cable supplied, a data cable with BNC plugs is used to connect the monitor to two computers simultaneously, the respective video signal (BNC/D-SUB) must be selected in the OSD menu (see Chapter "Operation of the monitor", Section "Setting monitor options (OPTION)").

► Connect the other connector of the data cable to the active monitor port on the system unit and secure the connector by tightening the safety screws.

If your system unit has two monitor ports ("onboard" screen controller and separate graphics card), the monitor port for the separate graphics card is usually active.

► Plug the power cable supplied into the power connector of the monitor.

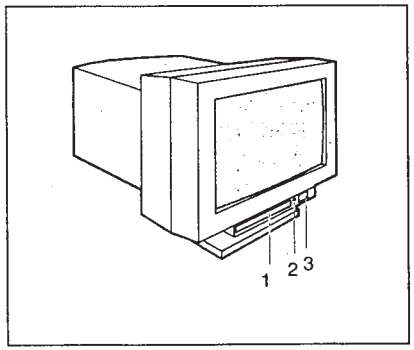
► Plug the power connector of the monitor into a properly grounded power outlet.

► Plug the power connector of the system unit into a properly grounded power outlet.

When you start working with your monitor for the first time you should install the appropriate graphics drivers for your application software. Details of how to do this are provided in the documentation on your screen controller/the associated driver software.

1-5

Operation of the monitor



1 = Control panel with buttons for screen setting
2 = Power indicator
3 = ON/OFF switch

Switching the monitor on

► Press the ON/OFF switch (3).

The power indicator (2) lights up green when the system unit is turned on.

If your PC has a power management function (energy-saving mode), you should read the notes on power management of the monitor in this chapter.

When you start your system, several mode changes will usually be carried out when various programs are called automatically (different settings for resolution and image refresh rate). Do not be confused by the unusual displays. They are not error messages.

Switching the monitor off

► Press the ON/OFF switch (3).

The power indicator (2) is dark.

Notes on power management

If your PC has a VESA DPMS (Video Electronics Standard Association, Display Power Management Signaling) power management function (energy-saving mode), your monitor will fully support this function. The monitor has a four-stage power management system.

Stage	ON	Standby mode	Suspend mode	OFF mode
Power indicator	glows green	flashes green/orange	flashes green/orange	glows orange
Function	Monitor operating normally	Monitor is dark	Monitor is dark	Monitor is dark
Power consumption	normal < 160 W	reduced to < 100 W	reduced to < 15 W	reduced to < 5 W

If your PC detects inactivity (no input) it sends an appropriate signal to the monitor to reduce the power consumption. The power indicator of the monitor changes color to indicate the status change. If there is still no input, power consumption is further reduced (OFF mode).

Once an input is made at the PC the screen contents are redrawn and full power is restored.

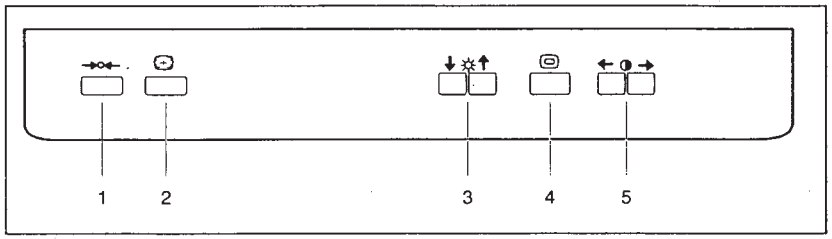
The length of the individual stages is determined by the power management system of the PC. For detailed information on how energy-saving mode operates refer to the Operating Manual or Technical Manual of your PC.

The service life of your monitor will be extended if the OFF mode is switched to after 30 minutes at the earliest (setting in screen saver, in your PC's BIOS setup or in the OSD menu).
When the monitor is switched to OFF mode by the power management system a power consumption of up to 5 W is maintained to feed the circuit for redrawing the screen contents.
To cut off power consumption totally, press the ON/OFF switch on the front of the monitor.

Changing the monitor settings

With the buttons on the control panel, you can change the monitor settings. Most settings are carried out via an integrated OSD menu (On-Screen Display).

The OSD menu is available in six languages. The English menu names are used in the following description (default setting). How you set a different language for the OSD menu is described in the section "Setting the language for the OSD menu (LANG)".



1 = Factory settings button
2 = Picture size/position button (automatic setting)
3 = Brightness/arrow up/down button
4 = Menu button
5 = Contrast/arrow left/right button

The factory settings button (1) is used to reset the values to the factory settings.

With the picture size/position button (2) the screen display can be automatically adjusted so that it fits on the screen. This function is especially intended for computers with graphic user interfaces (software) which fills the entire screen.

The brightness/arrow up/down buttons (3) are used to set the brightness and to operate the OSD menu.

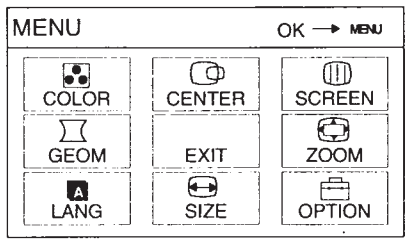
The menu button (4) switches the OSD menu on and off.

The contrast/arrow left/right buttons (5) are used to set the contrast and to operate the OSD menu.

To set the OSD menu, perform the following steps:

- Press the menu button to activate the OSD menu.

The main menu appears on the screen with icons for the setting functions.

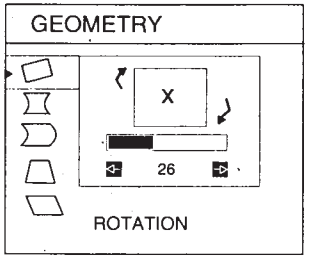


- Select the desired symbol with the arrow buttons and , e. g. *GEOM*.

  (If you wish to exit the OSD menu, select *EXIT*.)

  The selected symbol has a colored marking.
- Press the menu button to display the appropriate options window.

Depending on what options window is involved (here: *GEOMETRY*.), further icons are offered.



- If necessary, select a different symbol with the arrow buttons
- Make the required setting using the arrow buttons .

All changes are stored automatically.

The OSD menu disappears after approx. 30 seconds. The OSD menu can be hidden beforehand by pressing the menu button (possibly several times).

Adjusting the contrast and brightness

The contrast and brightness can be adjusted directly with the arrow buttons and of the control panel when the OSD menu is hidden. The set values are saved for all input signals.

You will increase the life of your screen if you adjust the contrast and brightness to medium.

In the setting window for contrast and brightness, the horizontal frequency and refresh rate of the current input signal are displayed as additional information.

	Setting the brightness of the background
	Setting the contrast between the foreground and background

Setting picture size and position (CENTER, SIZE, ZOOM)

The set values for the picture position and size are only saved for the current input signal.

	Calling the *CENTER* setting window Horizontal picture position: Shifting the picture to the left or to the right Vertical picture position: Shifting the picture down or up
	Calling the *SIZE* options window Horizontal picture size: Making the picture narrower or wider Vertical picture size: Making the picture shorter or longer
	Calling the *ZOOM* setting window Proportional picture size: Increasing or reducing picture size while retaining the side ratios The picture zoom adjustment will stop as soon as either the horizontal or vertical size reaches its maximum or minimum value.

Setting the picture geometry (GEOMETRY)

Tilt distortion must be set when the screen display is not axially symmetrical.
Pincushion distortion is when the sides of the screen display are bent inward or outward. Trapezoid distortion is when the top or bottom of the screen display is too wide or too narrow. Parallelogram distortion means that the sides of the picture bend to the left or right.
The set value for the picture rotation is saved for all input signals. All other values of the picture geometry are only saved for the current input signal.

	Calling the *GEOMETRY* options window
	Picture rotation (*ROTATION*): Rotating the picture in a clockwise or counter-clockwise direction
	Vertical pincushion distortion (*PINCUSHION*): Bending the right and left side inward or outward
	Asymmetrical pincushion distortion (*PIN BALANCE*): adjusting right and left side symmetrically
	Trapezoid distortion (*KEYSTONE*): Making the bottom edge narrower and the top edge wider or making the top edge narrower and the bottom edge wider
	Parallelogram distortion (*KEY BALANCE*): Reducing the angle of the left and right sides

Setting color temperature and colors (COLOR)

The "warmth" of the screen colors is set using the color temperature. The monitor has three fixed color temperatures (K = Kelvin). In addition, a user-defined fine calibration of the colors can also be carried out.
If you have reached the maximum value for one of the primary colors (red, green, blue), this will affect the settings for the other primary colors.
The set value for the color setting is saved for all input signals.

	Calling the *COLOR* setting window
5000K	Selecting color temperature 5000 K
6500K	Selecting color temperature 6500 K
9300K	Selecting color temperature 9300 K
R BIAS **G BIAS** **B BIAS**	Setting bias values (values for low brightness) for the color signals R (red), G (green) and B (blue)
R GAIN **G GAIN** **B GAIN**	Setting gain values (values for maximum brightness) for the color signals R (red), G (green) and B (blue)

Correcting picture problems (SCREEN)

If objects on the screen have red or blue shadows, the vertical or horizontal convergence of the monitor is incorrectly adjusted. If the picture you see on screen has light and dark stripes or appears dull and blurred, this may be due to what is known as the moiré effect. This effect usually has physical causes, being triggered by interference between the pixels in the matrix and the video signal. The intensity of the moiré effect is dependent on the screen resolution and horizontal frequency.

Set the picture size, brightness, etc. before you switch on moiré correction.
Only switch moiré correction on if you can see light and dark stripes on your screen, or if the picture is dull and blurred.
In some cases, moiré correction may cause the picture quality to deteriorate (reduced picture definition, slight flickering.)

If color impurities result at the four corners of the screen due to the geomagnetism, these can be corrected by setting the color purity.

The set value for the Moiré correction is only saved for the current input signal. All other picture correction values are saved for all input signals.

	Calling the *SCREEN* setting window
	Horizontal convergence (*H CONVERGENCE*): Shifting red and blue shadows to the right/to the left
	Vertical convergence (*V CONVERGENCE*): Shifting red and blue shadows up or down
TOP	Vertical convergence in the upper display area (*CONVER TOP*): Shifting red and blue shadows up or down
BOT	Vertical convergence in the lower display area (*CONVER BOTTOM*): Shifting red and blue shadows up or down
	Color unit (*LANDING*): Select screen corner for color purity correction
ADJ	Correct color purity in the selected screen corner (*LANDING ADJUST*)
	Switching Moiré correction on and off (*CANCEL MOIRE*) To set the degree of Moiré correction, the function must be switched on (*ON*).
ADJ	Setting degree of Moiré correction (*MOIRE ADJUST*)

Setting monitor options (OPTION)

With the options in the setting window *OPTION* the monitor can be degaussed, the video signal set, the position for the OSD menu changed, a delay time for the energy-saving mode set and the buttons for monitor adjustment locked/unlocked.

The set values are independent of a change in the input signal.

	Calling the *OPTION* setting window
	Degaussing the monitor (*MANUAL DEGAUSS*) The monitor is degaussed every time you switch it on. When color shifts occur in the screen display due to the influence of magnetic fields, the screen must be degaussed manually. Press the button ➔. The monitor is degaussed for approximately 3 seconds. If the monitor is to be degaussed a second time, please wait approximately 20 minutes before executing the function again.
	Setting video signal to BNC or D-SUB (*INPUT*) This setting is only necessary if your monitor is controlled alternatively via the BNC connections or the D-SUB connection, i.e. both data cables are connected. If only one signal is received, it will be recognized automatically when the monitor is switched on. *1* = The signal supplied via the D-SUB connection is fed in. *2* = The signal supplied via the BNC connections is fed in.
	Setting horizontal position of the OSD menu (*OSD H POSITION*) You can change the OSD position, for example, when you want to adjust the picture behind an OSD window.
	Setting vertical position of the OSD menu (*OSD V POSITION*) You can change the OSD position, for example, when you want to adjust the picture behind an OSD window.
	Setting the power management delay time (*PWR SAVE DELAY*) A delay time can be selected after which the monitor switches into the energy-saving mode (*5 SEC*, *1 MIN*, *60 MIN*, *OFF*), if it has received the corresponding signal from the PC. The service life of your monitor will be extended if the OFF mode is switched to after 30 minutes at the earliest. Additional information on the energy-saving mode is contained in the section "Notes on power management" in this chapter.
	Lock/unlock buttons for adjusting the monitor (*CONTROL LOCK*) With this option all buttons on the front of the monitor (with the exception of the menu button ▭ and the on/off switch) can be locked and unlocked again. *UNLOCK* = unlocked *LOCK* = locked If *LOCK* has been selected, only the symbols *OPTION* or *EXIT* can be selected in the main menu. If - with the OSD menu hidden - a button other than the menu button ▭ or the on/off switch is pressed, the key symbol appears on the screen.

1-8

Setting language for the OSD menu (LANG)

A	Setting language for the OSD menu You can choose from English (default setting), German, French, Spanish, Italian, and Japanese.

Activating the factory settings

With the factory settings button on the front of the monitor, either the adjustment of a selected function can be specifically reset to the factory setting, all settings for the current input signal can be reset or all input signals reset.

Resetting a selected function to the factory setting

- ► Select the function in the OSD menu to be reset.
- ► Press the factory settings button ➔0⬅.

Resetting all settings for the current input signal

- ► Press - with the OSD menu hidden - the factory settings button ➔0⬅.

All settings for the current input signal are reset.

i With this method those settings are not reset which are not influenced by a change in the input signal (language and position of the OSD menu, selection of the video signal, time delay of the energy-saving mode, locking of the buttons for monitor adjustment).

Resetting all settings for all input signals

- ► Press and hold down the factory settings button ➔0⬅ - with the OSD menu hidden - for at least 2 seconds.

All settings including brightness and contrast are reset to the factory values.

Notes on ergonomic color adjustment

If you select colors for the display in your application programs, take note of the information below. The primary colors blue and red on a dark background do not produce the minimum required contrast of 3:1 and are therefore not suitable for continuous text and data entry.

When using several colors for characters and background and giving the primary colors full modulation, you can obtain very suitable color combinations (see the following table):

Background	Characters							
	black	white	purple	blue	cyan	green	yellow	red
black		+	+	-	+	+	+	-
white	+		+	+	-	-	-	+
purple	+	+		-	-	-	-	-
blue	-	+	-		+	-	+	-
cyan	+	-	-	+		-	-	-
green	+	-	-	+	-		-	-
yellow	+	-	+	+	-	-		+
red	-	+	-	-	-	-	+	

\+ Color combination very suitable; light background colors are only suitable for devices which are operated with a refresh rate of at least 75 Hz.
Color combination not suitable because color locations are too close together, thin characters are not identifiable or rigorous focusing is demanded of the human eye.

1-9

Technical data

Dimensions and weight

CRT:	50 cm (21")
Visible diagonals:	50 cm
Dot pitch:	0.25-0.27 mm
Maximal resolution:	1600 x 1200 pixels
Preset display area:	388 mm x 291 mm
Dimensions (W x H x D):	498 mm x 505 mm x 474 mm
Weight:	31 kg
Accessories:	power cable (1,8 m)
	data cable (1.8 m)
Storable display modes:	24 (9 of which are preset)

Electrical data

Video:	analog, positive, 0.7 V_{pp}, 75 Ohm
Synchronization:	separate sync. TTL
	composite sync. TTL/ sync. on green
Line frequency:	30 kHz .... 107 kHz (multi-scanning)

Refresh rate:	48 Hz .... 160 Hz
Maximum pixel rate:	229 MHz
Power supply:	switches automatically
	90 V - 132 V, 50 Hz - 60 Hz ± 3 Hz, < 2 A typ. at 110 V
	180 V - 264 V, 50 Hz - 60 Hz ± 3 Hz, < 1 A typ. at 220 V
Power consumption:	< 160 W (ON, Normal mode)
(see power management):	< 100 W (Standby mode) < 15 W (Suspend mode) < 5 W (OFF mode)

Environmental conditions

Environment class 3K2, IEC 721	
Rated range of operation:	15 °C .... 35 °C
Humidity:	20 % .... 85 %
Limit range of operation:	5 °C .... 40 °C
Humidity:	20 % .... 85 %

Condensation must be avoided.

VESA-DDC-compatible VGA interface

Your monitor is equipped with a VESA-DDC-compatible VGA interface. VESA-DDC (Video Electronics Standard Association, Display Data Channel) is used as the communications interface between the monitor and the PC. If your PC is equipped with a VESA-DDC-compatible VGA interface, it can automatically read the data for ensuring optimum operation from your monitor and select the appropriate settings.

i If the monitor MCM 21T1 is not yet displayed in the list of monitors, you can select one of the following monitors instead:

Siemens Nixdorf MCM 2105 NTD, MCM 2107 NTD, MCM 211V

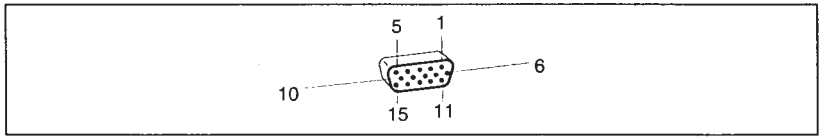
Preset operating modes

The display position and size have been set to optimum values at the factory for the operating modes listed above. Depending on the screen controller used, it may be necessary to adjust the display position and size. In this case, you can change and save the settings (see "Operation of the monitor").

Horizontal frequency	Refresh rate	Screen resolution
31.5 kHz ± 0,5 %	70 Hz ± 0,5 %	720 x 400
31.5 kHz ± 0,5 %	60 Hz ± 0,5 %	640 x 480
67,5 kHz ± 0,5 %	100 Hz ± 0,5 %	800 x 600
68.7 kHz ± 0,5 %	85 Hz ± 0,5 %	1024 x 768
100.1 kHz ± 0,5 %	110 Hz ± 0,5 %	1152 x 864
80.0 kHz ± 0,5 %	75 Hz ± 0,5 %	1280 x 1024
91.1 kHz ± 0,5 %	85 Hz ± 0,5 %	1280 x 1024
107.0 kHz ± 0,5 %	100 Hz ± 0,5 %	1280 x 1024
106,3 kHz ± 0,5 %	85 Hz ± 0,5 %	1600 x 1200

For ergonomic reasons we recommend a refresh rate of at least 75 Hz and a maximum resolution of 1280 x 1024 pixels.

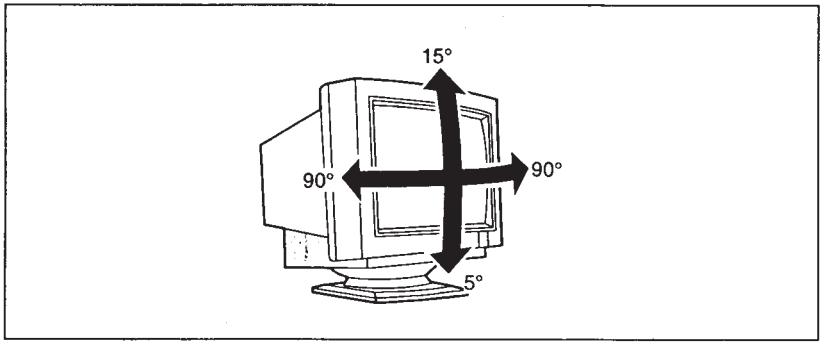
Pin assignment D-SUB



Pin	Meaning
1	Red video input
2	Green video input / Sync. on green
3	Blue video input
4	Monitor ground
5	DDC ground
6	Red video ground
7	Green video ground
8	Blue video ground

Pin	Meaning
9	+ 5 V
10	Logic ground
11	Monitor ground
12	Bi-directional Data (SDA)
13	H. sync
14	V. sync
15	Data Clock (SCL)

Tilting and turning area



Error handling

Should an error occur, first check the following points. If the distortion is still not eliminated, the monitor should, if possible, be checked with another data cable and on another PC.

Self-diagnosis

The monitor is equipped with a self-diagnosis function. If the monitor recognizes a fault, the screen display remains dark and the power indicator glows green or flashes orange.

The power indicator glows green

- Switch off the connected PC(s).
- Press and hold down the → button on the front of the monitor for 2 seconds.

If all four color bars (white, red, green, blue) are shown, the monitor is operating properly. In this case, check the PC.

If the color bars do not appear, this may be due to a fault in the monitor. Please contact our customer service with a description of the problem.

The power indicator flashes orange

- Switch the monitor off and on again.

If the power indicator continues to flash orange, there may be a fault in the monitor. Determine the interval at which the indicator flashes (in seconds) and contact our customer service with a description of the problem.

Possible malfunctions

If you cannot solve the problem, contact customer service.

The screen is blank (power indicator does not glow)

- ► Check whether the monitor is switched on.
- ► Check whether the power cable on the monitor is connected correctly.
- ► Check whether the mains socket is live.

The screen is blank (power indicator lights)

- ► Check whether the system unit is switched on.
- ► Check whether the data cable for the monitor is correctly attached to the monitor and the monitor port on the system unit. When the BNC connections are used, check whether the plugs are connected in the proper order (from left to right: red-green-blue-HD-VD).
- ► Check whether the monitor connection of the system unit used is active.
- ► Check whether the proper video signal (D-SUB/BNC) is selected in the OSD menu (see "Operation of the monitor", section "Setting monitor options (OPTION)").
- ► Press any key on the PC keyboard - the PC may be in energy saving mode.
- ► Change the brightness and/or the contrast; the monitor may be adjusted to the maximum dark setting.

Two fine horizontal lines (wires) are visible

i Your monitor is equipped with a Trinitron picture tube, which enables more light to reach the screen with a vertical slot mask, and therefore produces more intense colors. The thin lines visible with a white background are shadows of the damper wires, which stabilize the vertical slot mask. They are characteristic of picture tubes with a vertical slot mask. There is no malfunction.

The screen display is too small or not centered

The monitor recognizes an undefined mode (see "Technical data").

i To display the current mode (horizontal frequency and refresh rate), press the ↓ ☼ ↑ or ← ◑ → buttons.

- ► Press the picture size/position button ⊡ to automatically adjust the screen.
- ► Correctly adjust the picture size and position with the OSD menu (see "Operation of the monitor", section "Setting picture position and size (CENTER, SIZE, ZOOM)").

Picture geometry is defective

- ► Correctly adjust the picture geometry with the OSD menu (see "Operation of the monitor", section "Setting picture geometry (GEOMETRY)").

Colors are impure or shifted

- ► Demagnetize the monitor (see "Operation of the monitor", section "Setting monitor options (OPTION)").

- ► Set the color purity (see "Operation of the monitor", section "Correcting picture problems (SCREEN)").

White does not look white

- ► Set the color temperature (see "Operation of the monitor", section "Setting color temperature and colors (COLOR)").
- ► If the BNC connections are used, check whether the plugs are connected in the proper order (from left to right: red-green-blue-HD-VD).

Screen display has lines, is dull or blurred

- ► Set the brightness and contrast (see "Operation of the monitor").
- ► Degauss the monitor (see "Operation of the monitor", section "Setting monitor options (OPTION)").
- ► Set the convergence and reduce the Moiré correction (see "Operation of the monitor", section "Correcting picture problems (SCREEN)").

The screen display is flickering

- ► Set an ergonomic refresh rate (≥ 75 Hz) using the PC software (see documentation for your PC or your screen controller/graphics card).

Monitor adjustment buttons do not react

The buttons have probably been locked with the OSD menu.

- ► Unlock the monitor adjustment buttons (see "Operation of the monitor", section "Setting monitor options (OPTION)").

A humming noise is heard after switch-on

The monitor is degaussed every time you switch it on. This produces the humming noise. There is no malfunction.

Error messages on the screen

```
OUT OF SCAN RANGE
INPUT: 1/2
```

The input signal (horizontal frequency and refresh rate) at the displayed input (1 = D-SUB connection, 2 = BNC connections) does not match the technical data of the monitor.

- ► Adjust the video frequency range using the PC software (see documentation for your PC or your screen controller/graphics card).

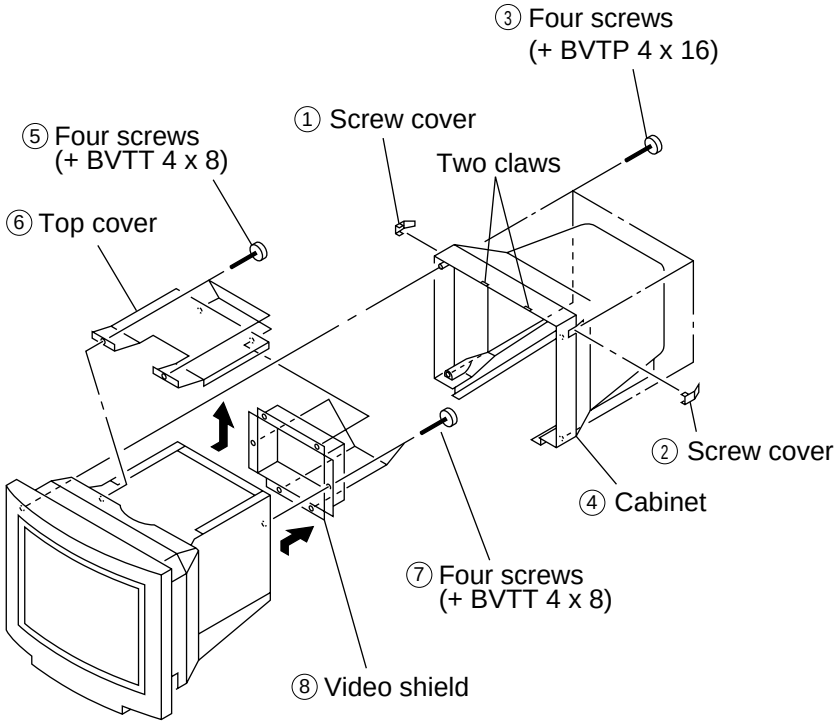
```
NO INPUT SIGNAL
INPUT: 1/2
```

The monitor does not recognize an input signal at the displayed input (1 = D-SUB connection, 2 = BNC connections).

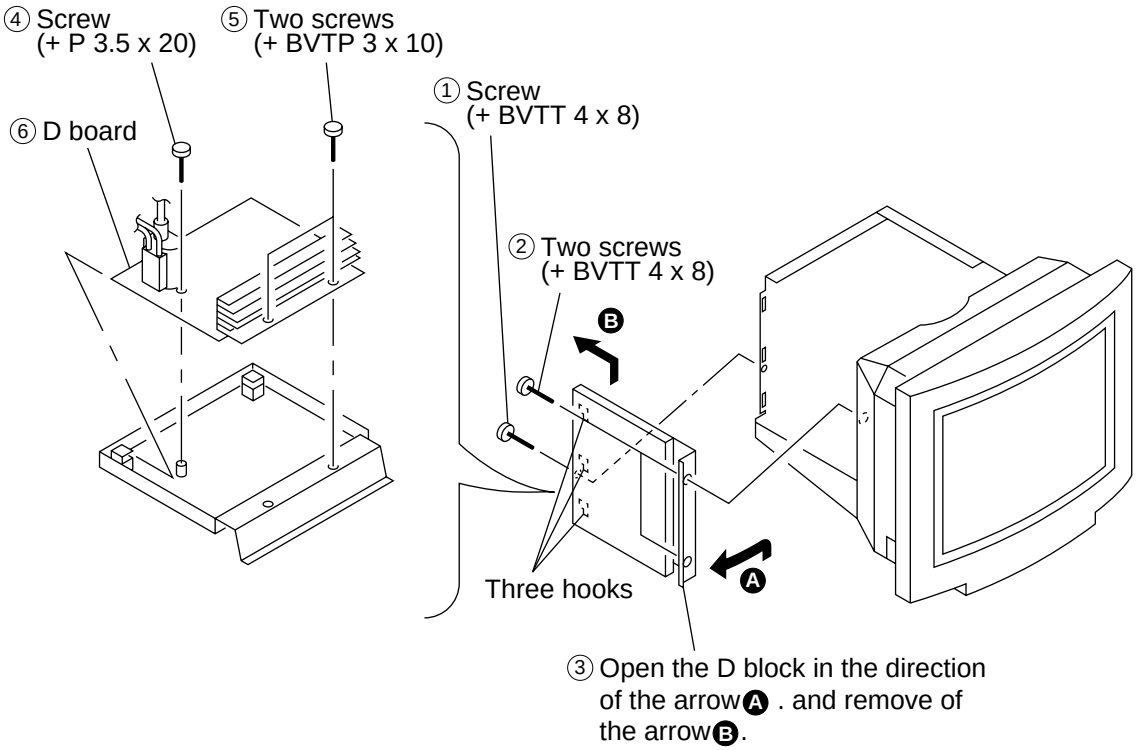
- ► Check whether the system unit is switched on.
- ► Check whether the data cable for the monitor is correctly attached to the monitor and the monitor port on the system unit.
- ► Check whether the power cable on the system unit is connected to a power outlet with grounding contact.

SECTION 2
DISASSEMBLY

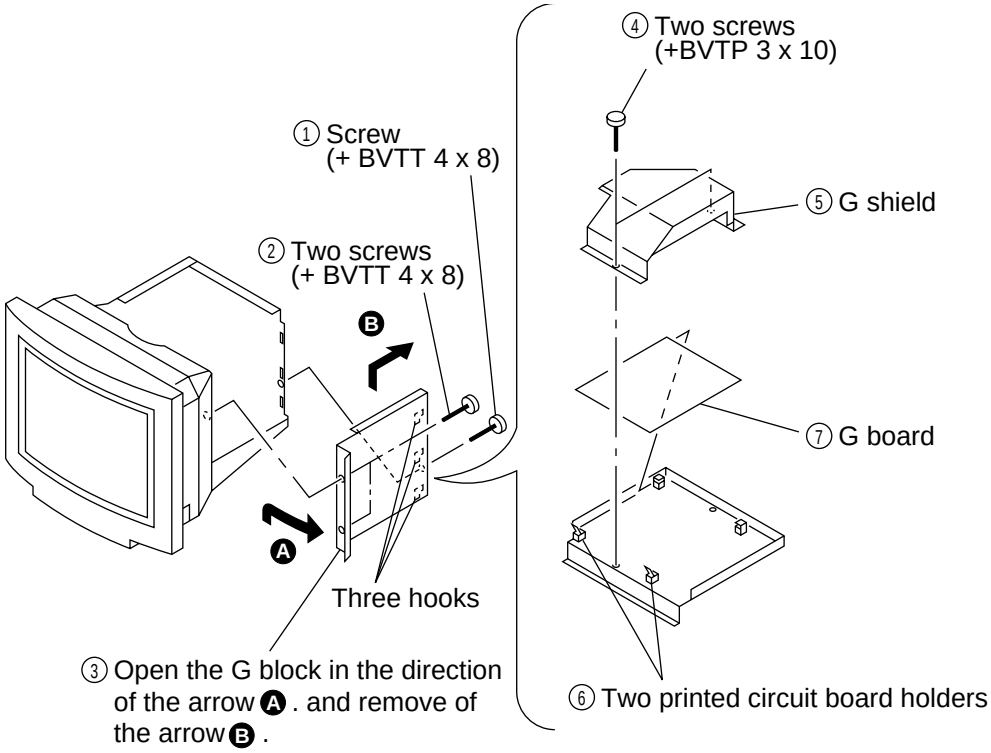
2-1. CABINET REMOVAL



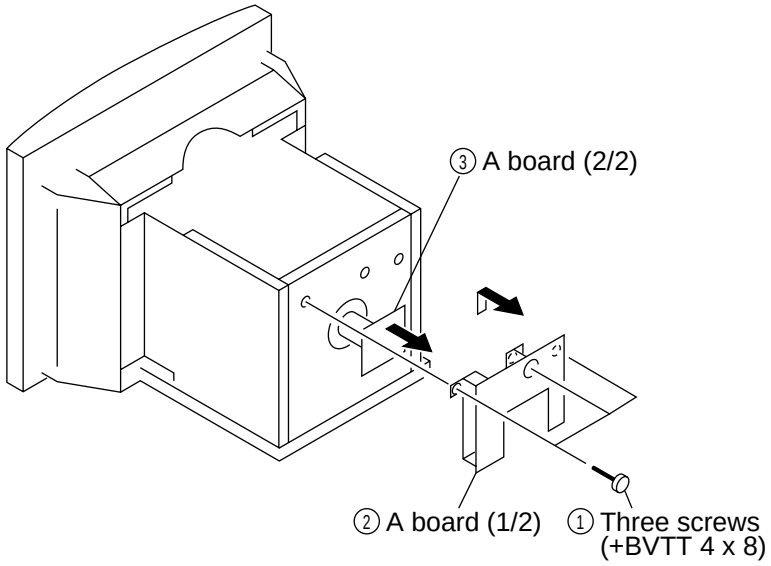
2-2. D BOARD REMOVAL



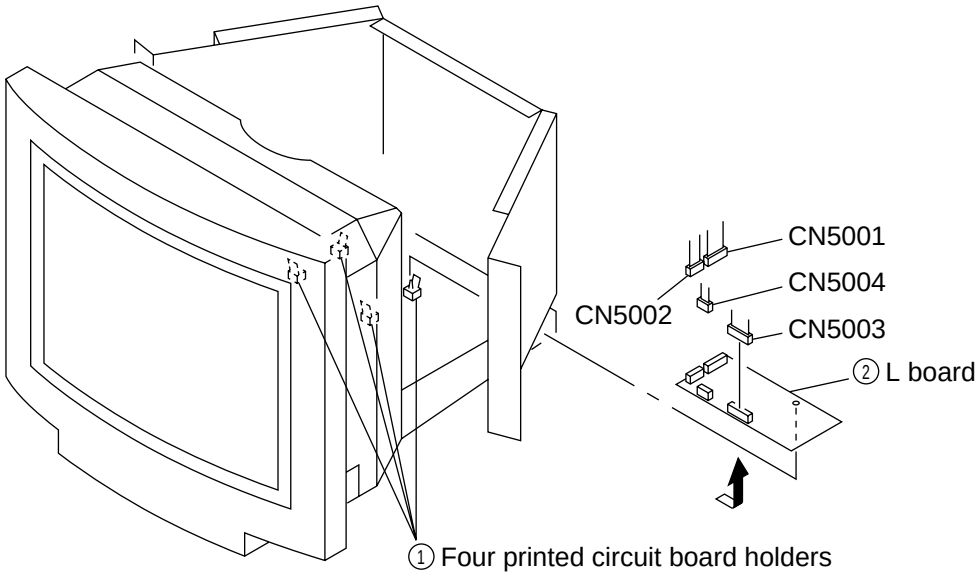
2-3. G BOARD REMOVAL


④ Two screws
(+BVTP 3 x 10)
① Screw
(+ BVTT 4 x 8)
⑤ G shield
② Two screws
(+ BVTT 4 x 8)
B
⑦ G board
A
Three hooks
③ Open the G block in the direction of the arrow A . and remove of the arrow B .
⑥ Two printed circuit board holders

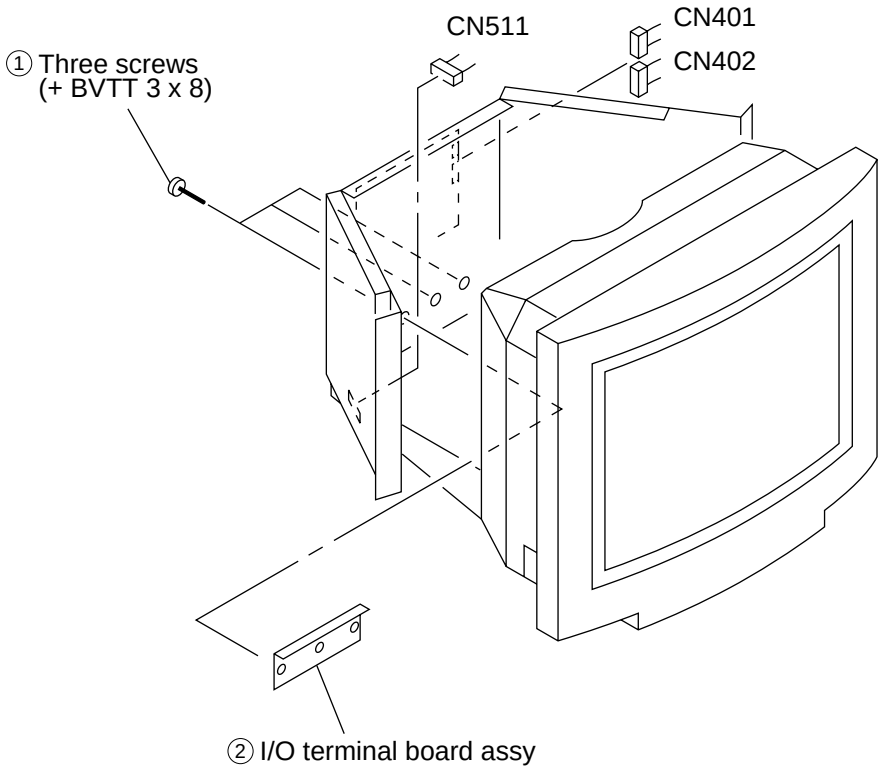
2-4. A BOARD REMOVAL



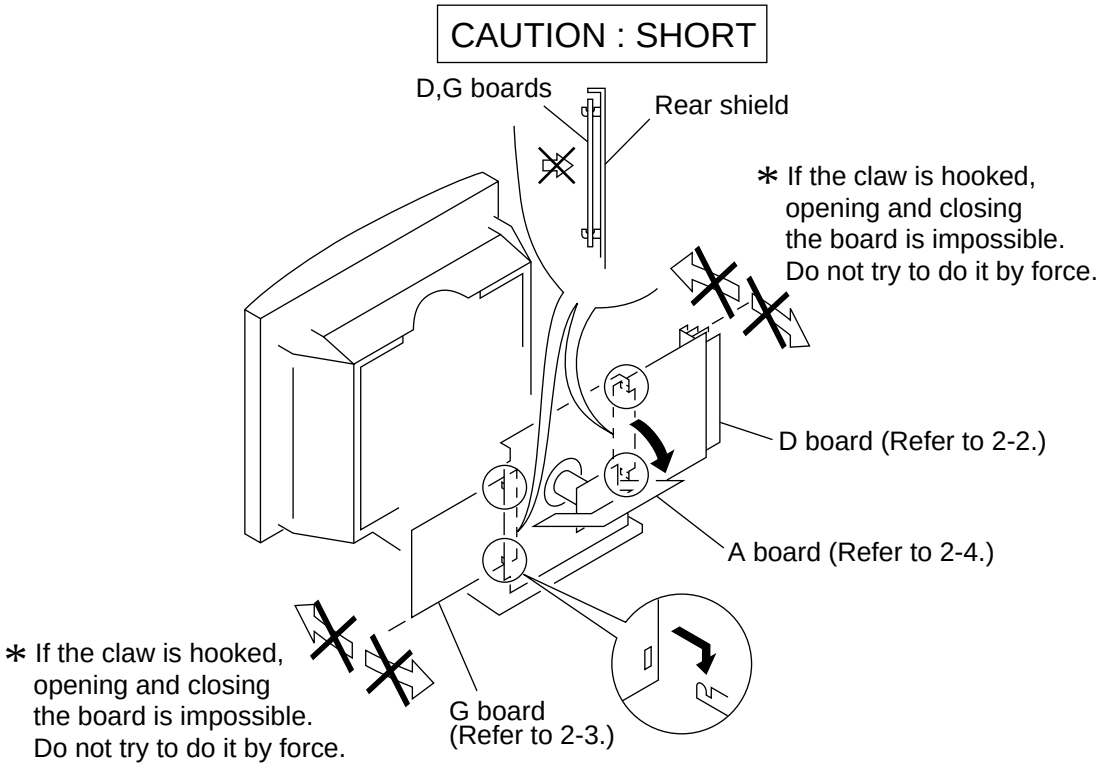
2-5. L BOARD REMOVAL



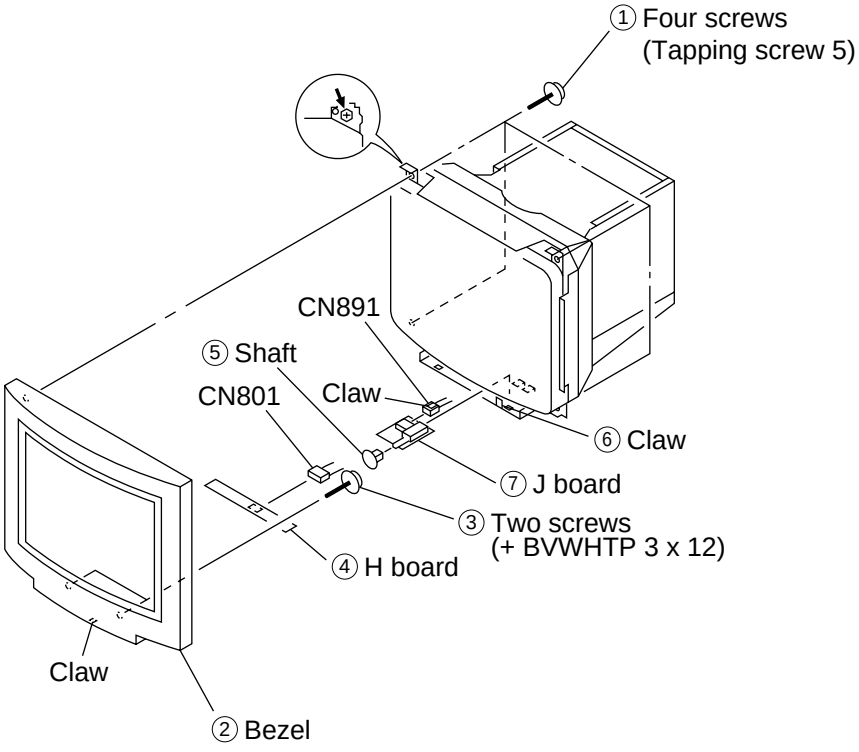
2-6. I/O TERMINAL BOARD ASSY REMOVAL



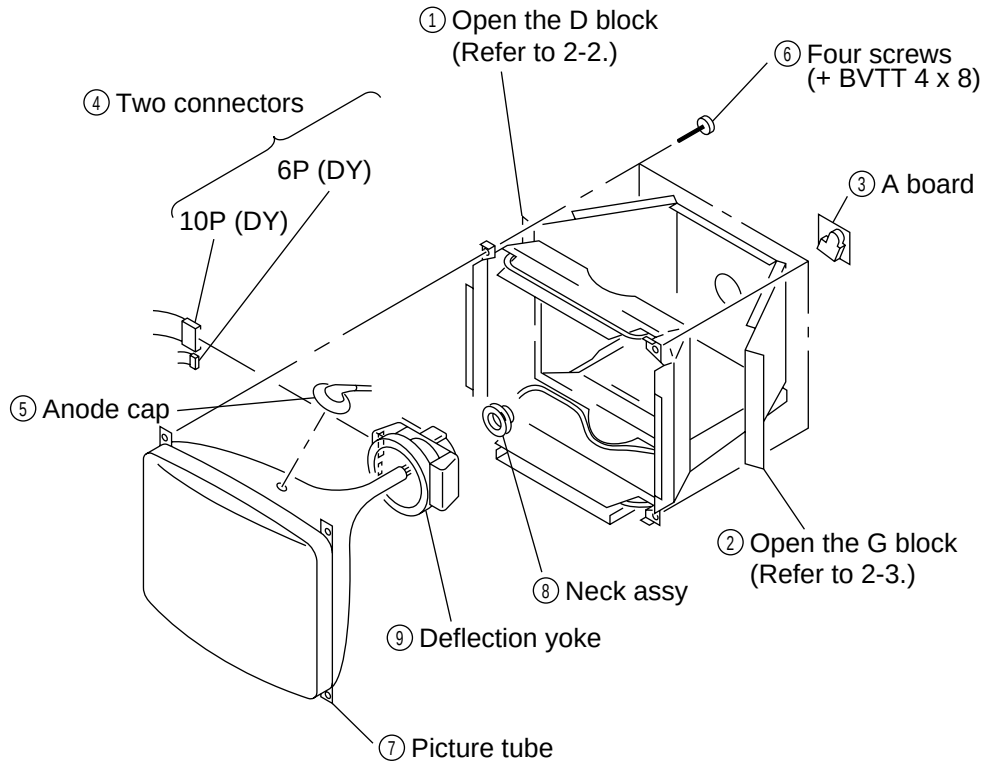
2-7. SERVICE POSITION


CAUTION : SHORT
D,G boards
Rear shield
* If the claw is hooked, opening and closing the board is impossible. Do not try to do it by force.
D board (Refer to 2-2.)
A board (Refer to 2-4.)
* If the claw is hooked, opening and closing the board is impossible. Do not try to do it by force.
G board (Refer to 2-3.)

2-8. H AND J BOARDS REMOVAL



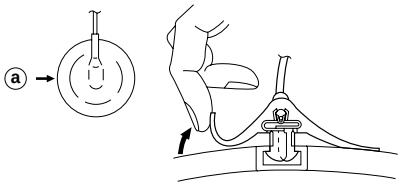
2-9. PICTURE TUBE REMOVAL



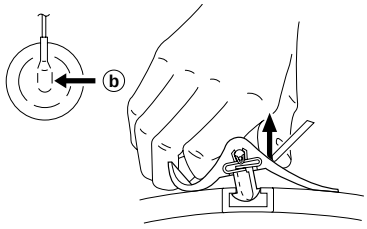
• REMOVAL OF ANODE-CAP

NOTE: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

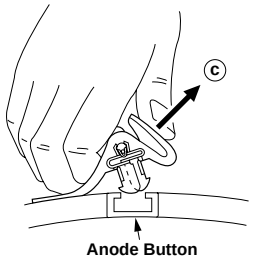
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



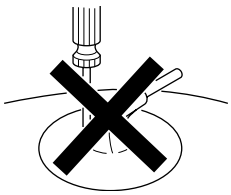
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.

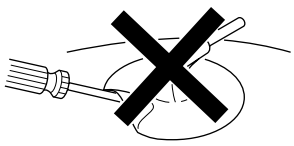


③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with shartp shaped material!
② Don't press the rubber hardly not to hurt inside of anode-caps! A material fitting called as shatter-hook terminal is built in the rubber.
③ Don't turn the foot of rubber over hardly! The shatter-hook terminal will stick out or hurt the rubber.





SECTION 3
SAFETY RELATED ADJUSTMENT

When replacing or repairing the shown below table, the following operational checks must be performed as a safety precaution against X-rays emissions from the unit.

	Part Replaced (◪)
HV Regulator Circuit Check	D Board IC901, T902 • Mounted D board
HV Protector Circuit Check	D Board Q660, Q661, D916, D935, C924, R665, R667, R940, R980, T902 • Mounted D board G Board PH680, Q680, Q683, D680, R680, R685, R686, R687, R688, R689 • Mounted G board
Beam Current Protector Circuit Check	D Board IC901, D904, D907, D908, R011, R908, R909, R921, R925, R926, R929, R930, T902 • Mounted D board

Check Condition

Input voltage : 100 ~ 240 VAC
Input signal : White Cross Hatch at 107 kHz
Beam control : BRT and CONT → Minimum
B+ voltage : 195 ~ 205 VDC

a) HV Regulator Circuit Check

1) Confirm that the voltage of the pin ② of CN901 on D board is within the voltage range shown below.
Standard: 9.00 ± 0.065 VDC

b) HV Protector Circuit Check

1) Confirm that the HV protector circuit works and TV Raster disappears when apply the voltage as shown below between pin ③ of CN901 on D board and GND using an external DC power supply.
Check Condition: Less than 34.10 VDC

c) Beam Current Protector Circuit Check-1

1) Measure HV voltage and record that value.
2) Shorted between pin ① and pin ④ of CN901 on D board.
3) Connect to the Constant Current Jig (A) between pin ① of CN901 on D board and GND, confirm that the Beam Current Protector Circuit works and HV go down more than 1.25 kV from the value of (1).
Check Condition: 1.50 mA

d) Beam Current Protector Circuit Check-2

1) Connect to the Constant Current Jig (B) between pin ① of CN901 on D board and GND, confirm that the Beam Current Protector Circuit works and TV Raster disappears.
Check Condition: 1.59 mA

e) Voltage of 3rd winding of FBT

1) Confirm that the voltage of pin ③ of CN901 on D board is within the voltage range shown below.
Standard: more than 28.0 VDC

SECTION 4
ADJUSTMENTS

Note: Hand degauss must be used on stand-by or power-off condition.
This model has an automatic earth magnetism correction function by using an earth magnetism sensor and a LCC coil. When using a hand degauss while monitor (LCC coil) is being operated, it sometimes gets magnetized, and the system may not work properly as a result.

• Landing Rough Adjustment

1. Enter the full white signal. (or the full black dots signal).
2. Adjust the contrast to the maximum.
3. Make the screen monogreen.

Note: Off the outputs from R ch and B ch of SG.

4. Reverse the DY, and adjust coarsely the purity magnet so that a green raster positions in the center of screen.
5. Adjust the tilt of DY, and fix lightly with a clamp.

Note: "TILT" shall be set at 0.

• Landing Fine Adjustment

1. Put the set inside the Helmholtz coil. ("LCC SW" = "12")
2. Input the single green signal and set the CONT control to MAX.

Note: After the W/B adjustment with 9300K, measure an average of ΣIk when a full white signal is entered in the CONT MAX/BRT CENT status. Then make adjustment so that the specified screen can be attained after aging for 2 hours with Ik equivalent to 30% of the average value.

3. Demagnetize the metal part of the chassis with the hand degausser and coil degausser, and the CRT surface with the hand degausser.
   Input AC 230V to AC IN, turn on and off the power to perform auto degaussing. (Perform auto degaussing by setting "MON CON REG2"=152. Return to the original value after use.)
   Demagnetize the CRT surface with the hand degausser again.

Note:

(1) Hand degauss must be used on stand-by or power-off condition.
   This model has an automatic earth magnetism correction function by using an earth magnetism sensor and a LCC coil. When using a hand degauss while monitor (LCC coil) is being operated, it sometimes gets magnetized, and the system may not work properly as a result.
(2) Adjust in a non-magnetic field. BV=45uT.
(3) If adjusting in a magnetic fields, add the shift from the non-magnetic field in your estimation.

4. Attach the wobbling coil to the designated part of the CRT neck.
5. Attach the sensor of the landing adjustment unit on the CRT surface.
6. Adjust the DY position and purity, and the DY tilt, and landing of the center and 4 corners with the landing checker.
   After adjustment, set "LCC SW" to "13".
   • Write terrestrial magnetism sensor reading VX and VY to "LCC VX" and LCC VY" respectively. Adjust the landing by moving "LCC NS", "LCC LT", "LCC LB", "LCC RT" and "LCC RB". However, the register adjustment must be limited within the following range.
   "LCC NS" 128 ± 15
   "LCC LT", "LCC LB", "LCC RT", "LCC RB" 128 ± 40
   Save the service data.

<Specifications>
Adjust so that the green is within the specification given right.
4 corner adjust target : within ± 1

(μm)

0 ± 3	0 ± 7.5	0 ± 3
0 ± 5	0 ± 5	0 ± 5
0 ± 3	0 ± 7.5	0 ± 3

The red and blue must be within the specification given right with respect to the green.

(μm)

± 6	± 6	± 6
± 6	± 4	± 6
± 6	± 6	± 6

A difference between red and blue must be within the specification given right.

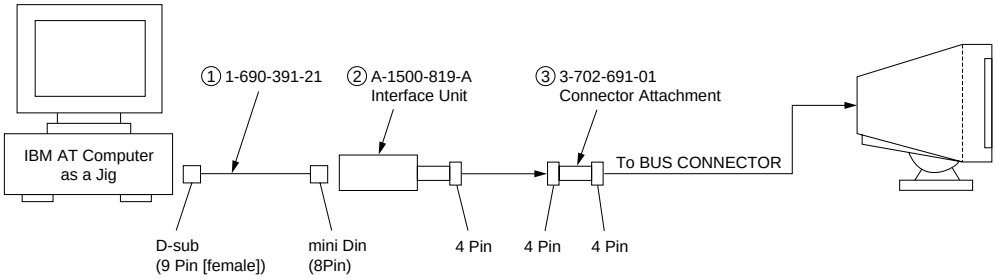
(μm)

10	10	10
10	7	10
10	10	10

* Adjustment and measurement should be made at the points one inch inside the fluorescent screen.

7. For the up/down swing, swing the DY and insert a wedge so that the up and down pins are equal at the top and bottom. Adjust the DY TLV VR so that the horizontal trapezoid is equal at the left and right. Insert the wedge firmly so that the DY does not shake.
8. Check the landing of each corner, and if it does not satisfy the specification, adjust the landing of four corners using "LCC LT", "LCC LB", "LCC RT" and "LCC RB".
   However, the register adjustment must be limited within the following range.
   "LCC NS" 128 ± 15
   "LCC LT", "LCC LB", "LCC RT", "LCC RB" 128 ± 40
   After adjustment, save the service data.
9. Remove the sensor and wobbling coil.
10. Switch the signal to R.G.B., and check that each color is pure.
11. Check that the DY is not tilting.

Connect the communication cable of the computer to the connector located on the D board on the monitor. Run the service software and then follow the instruction.



*The parts above (① ~ ③) are necessary for DAS adjustment.

- **Convergence Rough Adjustment**

(1) Receive an image of the white crosshatch signals (white lines on black).
(2) Place the protrusions of the 6-fold poles magnet attached to the CRT neck upon each other. (Fig. 1)
(3) Make rough adjustment of the H and V direction convergence by using 4-fold poles magnet.
(4) Make a rough adjustment of the V direction convergence by using "V. STAT".

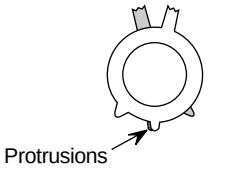


Fig. 1

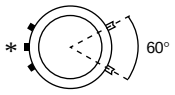


Fig. 3

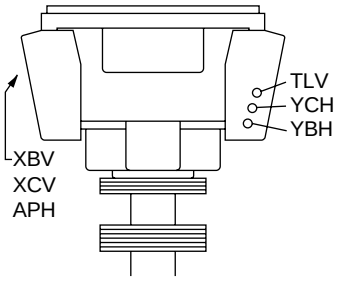
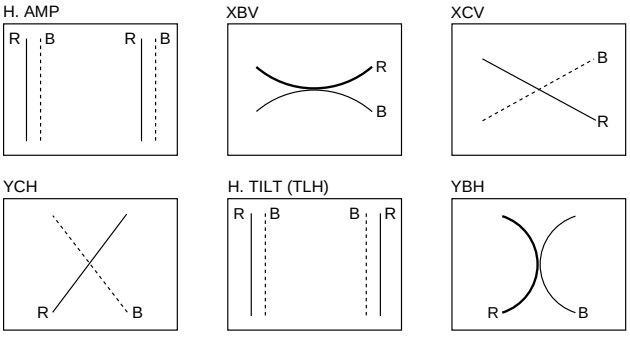
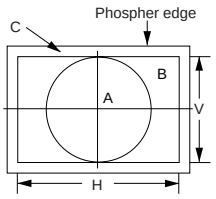


Fig. 2

* Set so that the protruding parts of the 2 magnet rings agree with each other.



- **Convergence Specification**



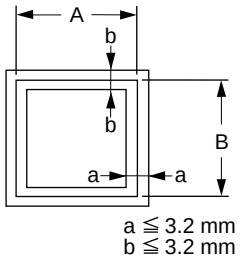
MODE	Zone	N. Hemisphere	S. Hemisphere
fH≥ 60 kHz	A Zone	0.24 mm	0.24 mm
	B Zone	0.24 mm	0.28 mm
	C Zone	0.32 mm	0.32 mm
fH≤ 60 kHz	A Zone	0.24 mm	0.28 mm
	B Zone	0.32 mm	0.36 mm
	C Zone	0.36 mm	0.40 mm

- **White Balance Adjustment Specification**

(1) 9300K
x = 0.281 ± 0.005
y = 0.311 ± 0.005
(All White)

(2) 6500K
x = 0.313 ± 0.005
y = 0.329 ± 0.005
(All White)

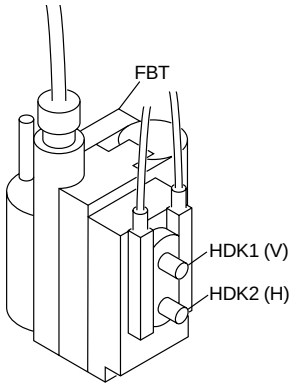
- **Vertical and Horizontal Position and Size Specification**



MODE	1-5,9	6-8
A	388 mm	364 mm
B	291 mm	291 mm

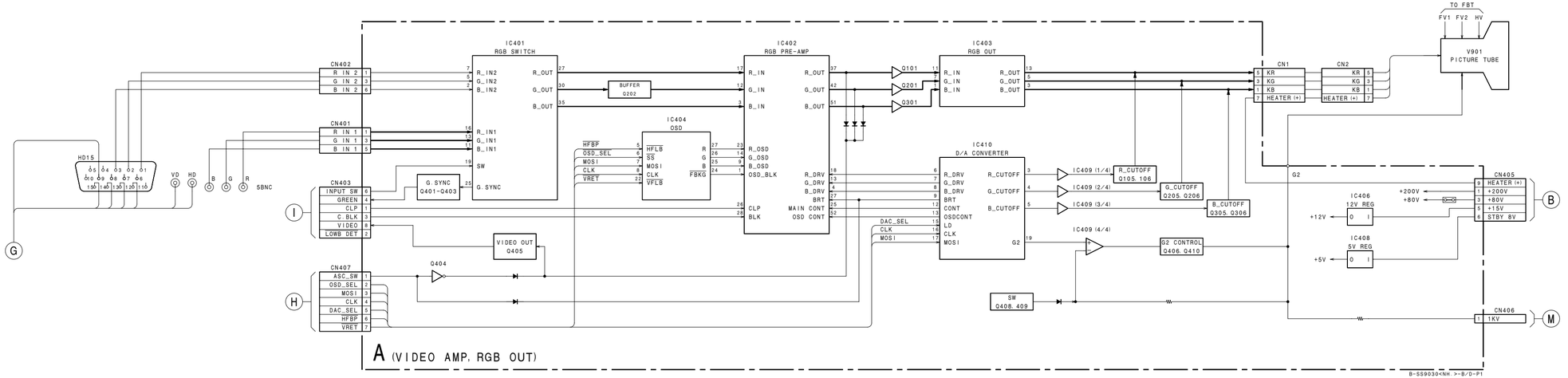
- **Focus adjustment**

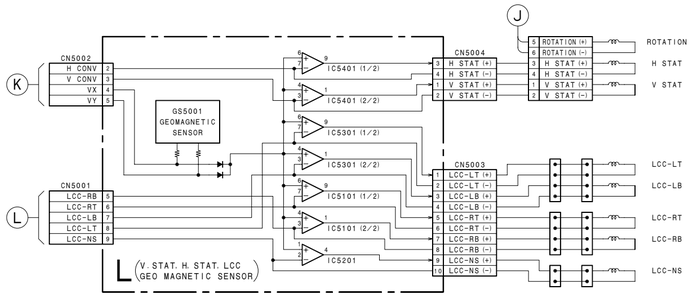
Adjust the focus volume 1 and 2 (HDK 1 and 2) for the optimum focus.

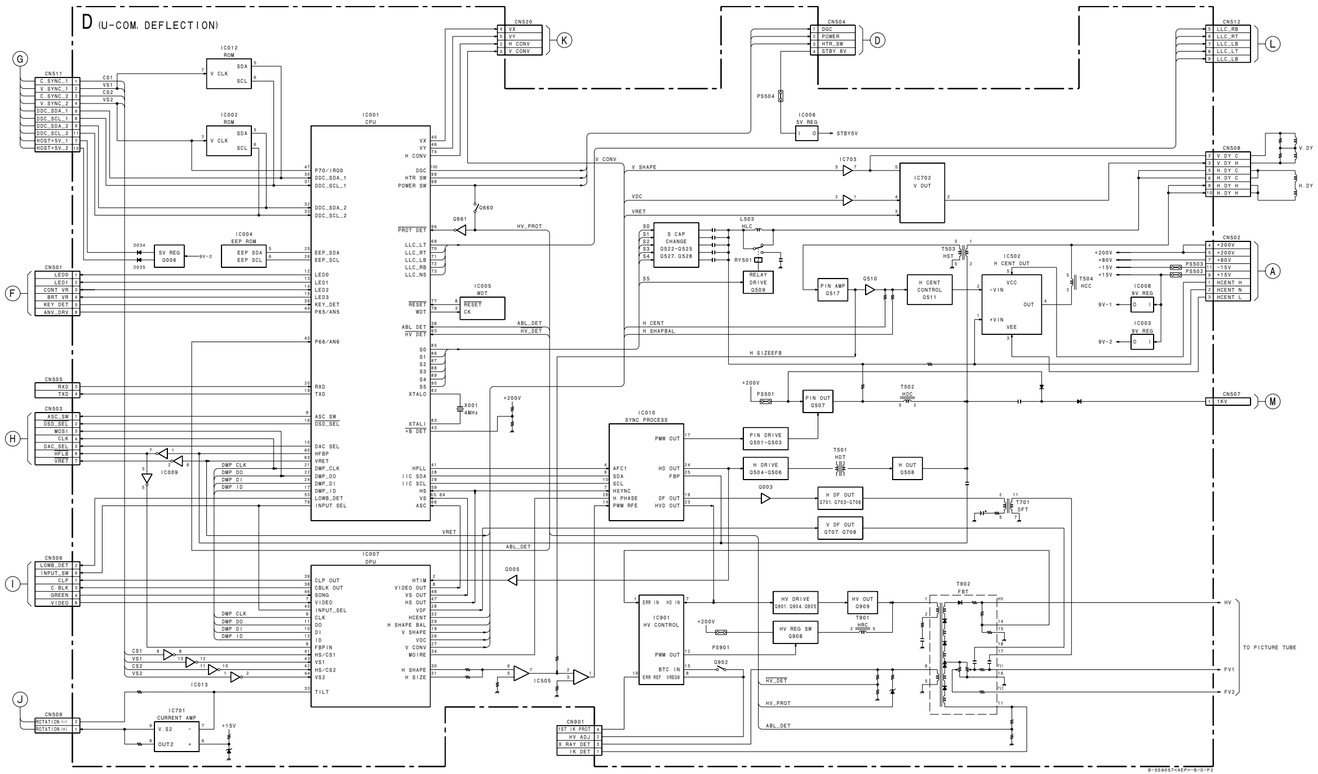


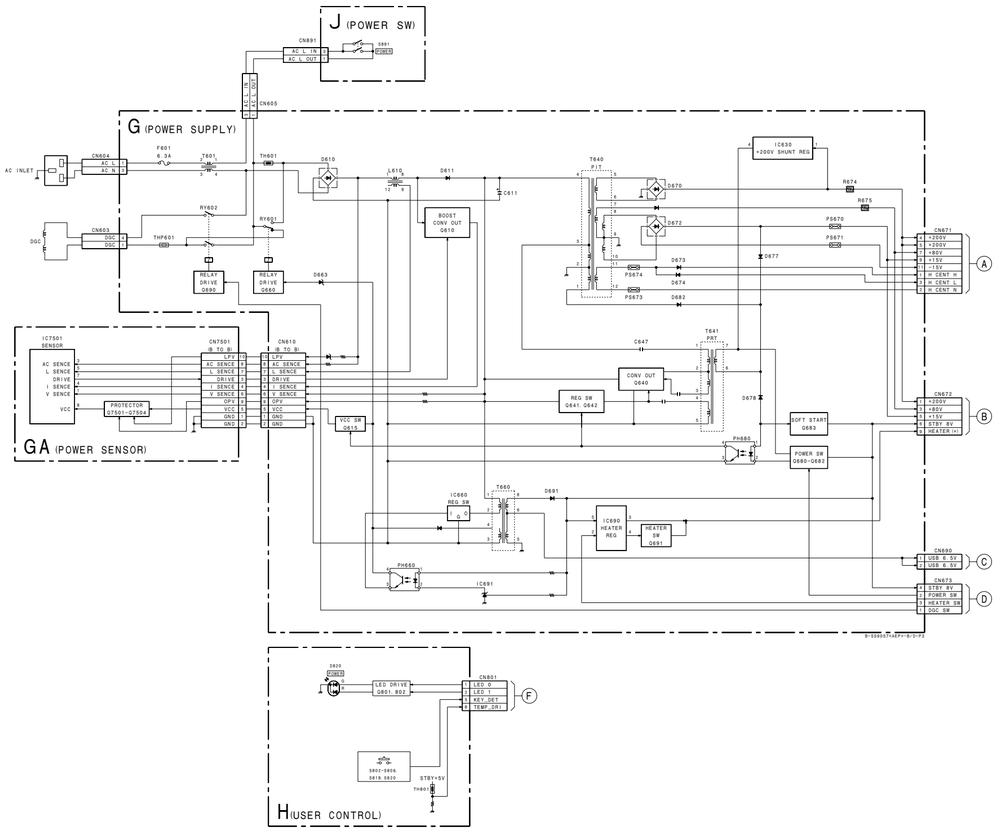
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAMS

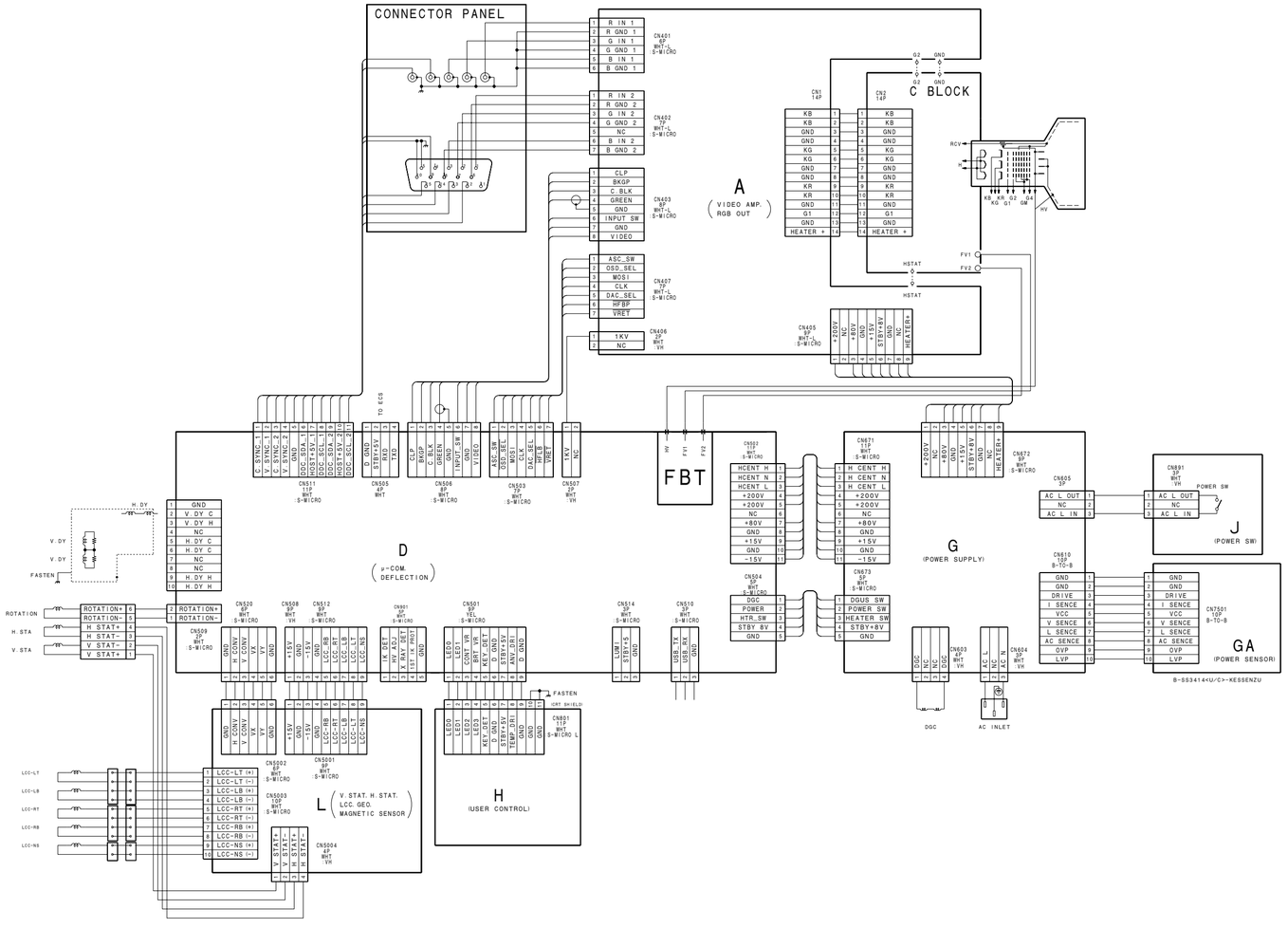




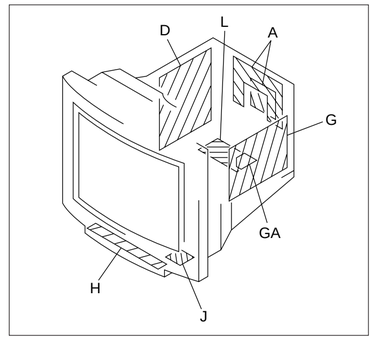

D (U-COM, DEFLECTION)
IC001 CPU
IC010 SYNC PROCESS
IC007 DPU
IC012 ROM
IC002 ROM
IC004 EEP ROM
IC005 RESET
IC009
IC013
IC701 CURRENT AMP
IC702 V OUT
IC703
IC502 H CENT OUT
IC503 S CAP CHANGE
IC006 5V REG
IC008 9V REG
IC003 9V REG
IC901 HV CONTROL
CN501
CN503
CN505
CN506
CN507
CN508
CN509
CN511
CN512
CN520
CN604
CN802
CN901
TO PICTURE TUBE


J (POWER SW)
G (POWER SUPPLY)
GA (POWER SENSOR)
H (USER CONTROL)
IC630 +200V SHUNT REG
IC660 REG SW
IC690 HEATER REG
IC691
IC7501 SENSOR
PROTECTOR Q7501-Q7504
LED DRIVE Q851, 852
5802-5806 5810, 5820
STBY+5V
CN605
CN604
CN603
CN610
CN671
CN672
CN673
CN690
CN801
CN7501
RELAY DRIVE Q690
RELAY DRIVE Q660
BOOST CONV OUT D610
CONV OUT Q640
REG SW Q641, Q642
SOFT START Q683
POWER SW Q680-Q682
HEATER SW Q691
VCC SW Q615

5-2. FRAME SCHEMATIC DIAGRAM



5-3. CIRCUIT BOARDS LOCATION



5-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted. (pF: μμF) Capacitors without voltage indication are all 50 V.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4 W (CHIP : 1/10 W)

- All resistors are in ohms.
- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-ground.
- : earth-chassis.
- The components identified by ✠ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. (See page 3-1)
- When replacing the part in below table, be sure to perform the related adjustment.

	Part replaced (◪)	
HV Regulator Circuit Check	D Board	IC901, T902 • Mounted D board
HV Protector Circuit Check	D Board	Q660, Q661, D916, D935, C924, R665, R667, R940, R980, T902 • Mounted D board
	G Board	PH680, Q680, Q683, D680, R680, R685, R686, R687, R688, R689 • Mounted G board
Beam Current Protector Circuit Check	D Board	IC901, D904, D907, D908, R011, R908, R909, R921, R925, R926, R929, R930, T902 • Mounted D board

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- All voltages are in V.
- Readings are taken with a 10 M digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- ✳ : Can not be measured.
- Circled numbers are waveform references.
- : B + bus.
- : B – bus.

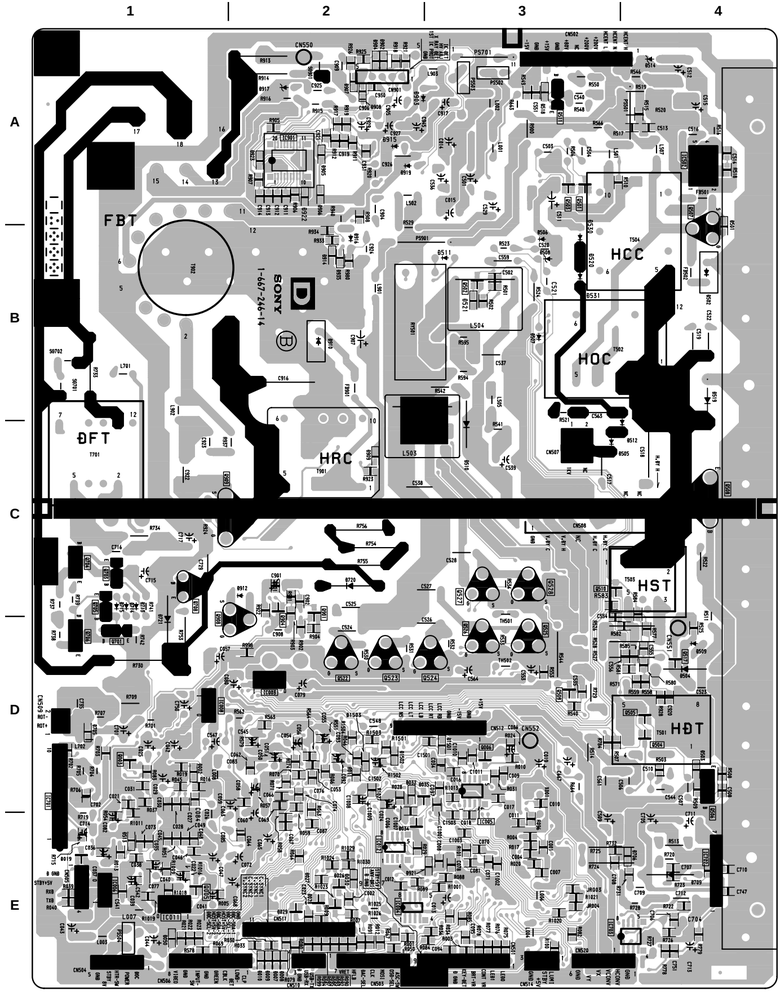
Terminal name of semiconductors in silk screen printed circuit (✳)

	Device	Printed symbol	Terminal name	Circuit
①	Transistor	T	Collector / Base / Emitter	
②	Transistor	—	Collector / Base / Emitter	
③	Diode		Cathode / Anode	
④	Diode	T	Cathode / Anode / (NC)	
⑤	Diode	—	Cathode / Anode / (NC)	
⑥	Diode	T	Common / Anode / Cathode	
⑦	Diode	—	Common / Anode / Cathode	
⑧	Diode	T	Common / Anode / Anode	
⑨	Diode	—	Common / Anode / Anode	
⑩	Diode	T	Common / Cathode / Cathode	
⑪	Diode	—	Common / Cathode / Cathode	
⑫	Diode	∣	Anode / Cathode Anode / Anode Cathode / Anode	
⑬	Transistor (FET)	∣	Drain / Source / Gate	
⑭	Transistor (FET)	⊢	Drain / Source / Gate	
⑮	Transistor (FET)	∣	Source / Drain / Gate	
⑯	Transistor	∣	Emitter / Collector / Base	
–	Discrete semiconductor			

(Chip semiconductors that are not actually used are included.)

Ver.1.5

— D BOARD (Conductor Side) —



D [µ-COM, DEFLECTION]

• D BOARD SEMICONDUCTOR LOCATION

IC

	(Conductor Side)	(Component Side)
IC001		E–2
IC002		E–3
IC003	D–2	D–3
IC004	E–2	
IC005	D–3	
IC006	E–1	E–4
IC007		D–3
IC008	D–1	D–3
IC009		D–2
IC010		E–4
IC011	E–1	E–4
IC013		E–3
IC502	A–4	A–1
IC505		D–3
IC701	D–1	D–4
IC702	E–4	E–1
IC703	E–3	
IC901	A–2	

TRANSISTOR

	(Conductor Side)	(Component Side)	✻
Q001		D–4	②
Q003	D–1		①
Q004		D–4	②
Q005	E–1		①
Q006	D–3		①
Q007		D–4	②
Q501	A–3		①
Q502	B–3		①
Q503	A–3		①
Q504	D–4		①
Q505	D–4		①
Q506	D–4	D–1	–
Q507	A–4	A–1	–
Q508	C–4	C–1	–
Q509	D–3		①
Q510	C–3		①
Q511	A–3	A–2	–
Q512		D–2	②
Q517	D–4		①
Q522	D–2	D–3	–
Q523	D–2	D–2	–
Q524	D–3	D–2	–
Q525	D–3	D–2	–
Q526	D–3	D–2	–
Q527	C–3	C–2	–
Q528	C–3	C–2	–
Q660		D–2	②
Q661		D–2	②
Q701	D–1	D–4	–
Q703	C–1	C–4	–
Q704	C–1	C–4	–
Q705	C–1	C–4	–
Q706	D–1	D–4	–
Q707		D–3	②
Q708	C–1	C–3	–
Q901	C–2		①
Q902		A–3	②
Q904	C–2		①
Q905		C–3	②
Q908	D–2	D–3	–
Q909	C–2	C–3	–
Q911		D–3	②

DIODE

	(Conductor Side)	(Component Side)	✻
D004		E–2	⑦
D009	E–2		③
D010	E–2		③
D012		E–2	⑦
D013		E–2	⑦
D014		E–2	⑦
D015		E–2	⑦
D016		E–2	⑦
D019	E–1		⑥
D020		E–4	⑦
D025		D–4	③
D026	E–2		⑥
D027	E–2		⑥
D028	E–2		⑥
D029	E–2		⑥
D032	D–2		③
D033		E–2	③
D035	D–3		⑥
D050	E–1		③
D501	B–4		③
D502	B–4	B–1	–
D503	D–4		③
D504	D–4	D–1	–
D505	C–3	C–1	–
D506	B–3	B–2	–
D507	B–3	B–2	–
D508	B–3	B–2	–
D509	D–4	D–1	–
D510	C–3	C–2	–
D511	B–3	B–2	–
D512	C–4	C–1	–
D513	E–1		③
D514	A–4	A–1	–
D516		D–2	③
D517		D–2	③
D518	A–3		③
D519	B–4	B–1	–
D520	B–3	B–2	–
D521	B–3		③
D660		D–2	③
D701		D–4	③
D704		D–5	③
D705	D–1		③
D706	E–4		③
D709	E–4	E–1	–
D713	C–1	C–4	–
D714	C–1	C–4	–
D715	C–1	C–4	–
D718		D–4	③
D720	C–2	C–3	–
D721	D–1	D–4	–
D901		C–3	③
D902	A–2		③
D903	A–2	A–2	–
D904	A–2		③
D905	A–2		③
D906	A–2		③
D907	A–2		③
D908	A–2		③
D909	C–2		③
D910	B–2	B–3	–
D911		C–3	③
D913		A–3	③
D915	A–2	A–2	–
D916	B–2	B–3	–
D917	A–2	A–3	–
D919	A–2	A–2	–
D921	E–3		③
D922	A–2		③
D923	A–2		③
D924		E–2	③
D935	B–2		③
D1501	D–3		③
D1502	D–2		③
D1503	D–2		③

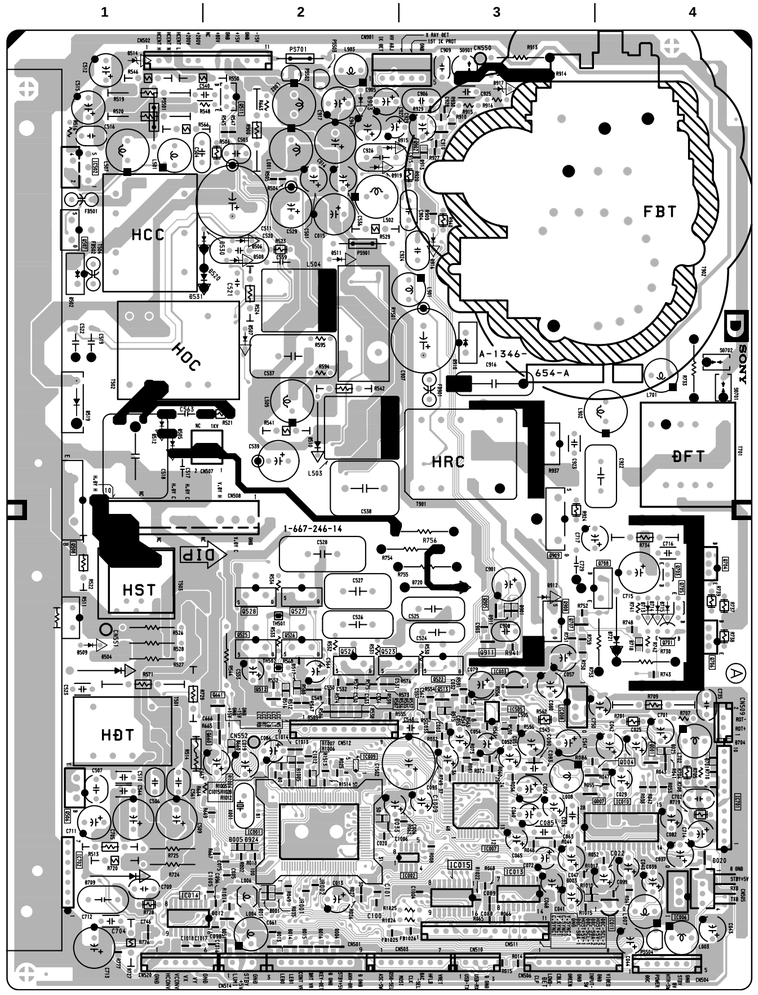
CRYSTAL

	(Conductor Side)	(Component Side)
X001	D–3	D–2

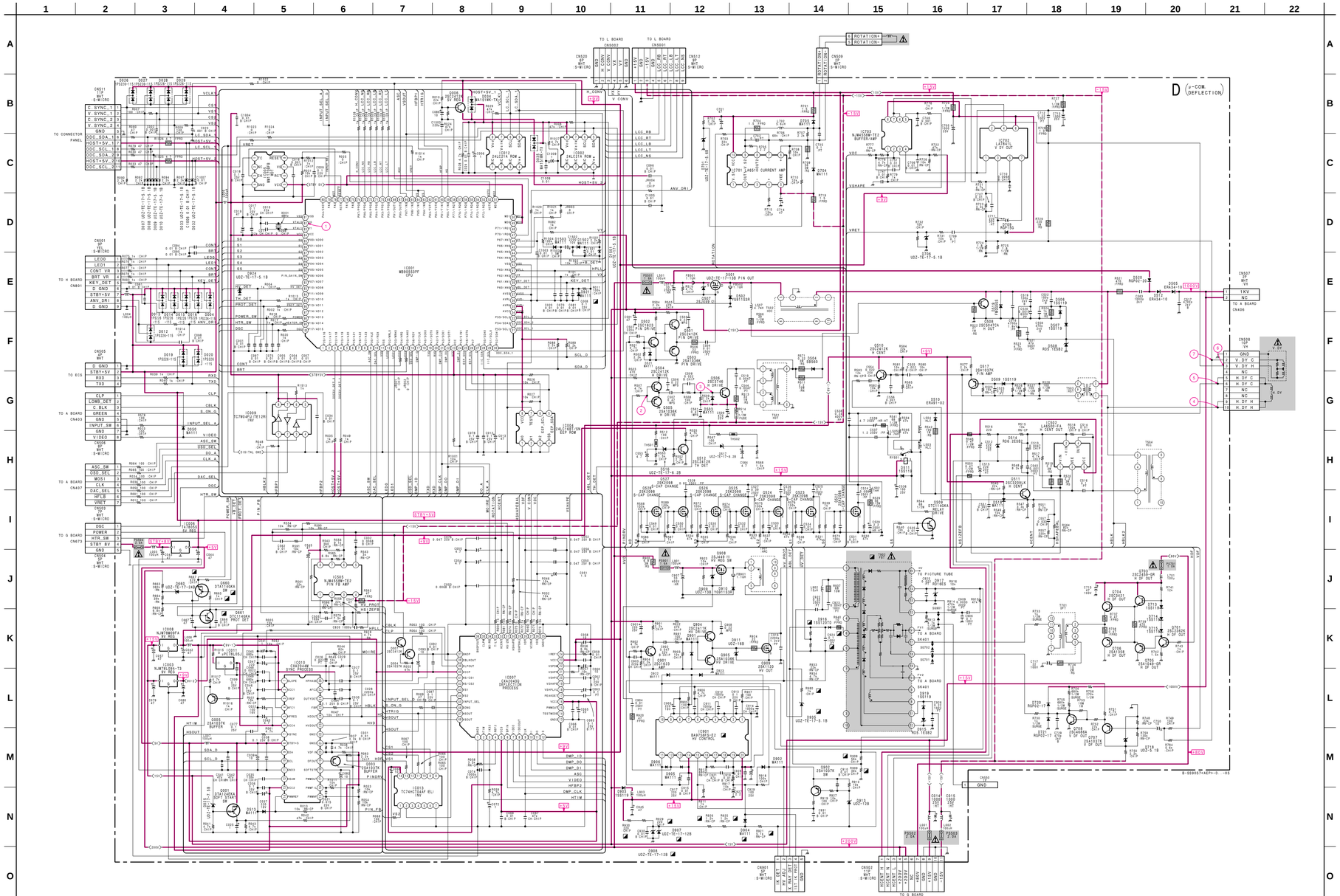
✻: Refer to Terminal name of semiconductors in silk screen printed circuit (see page 5-9)

NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

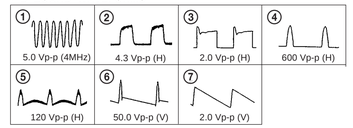
— D BOARD (Component Side) —



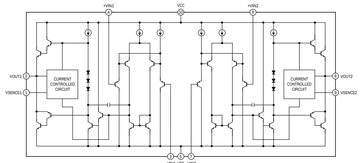
(1) Schematic Diagram of D Board



• D BOARD WAVEFORMS



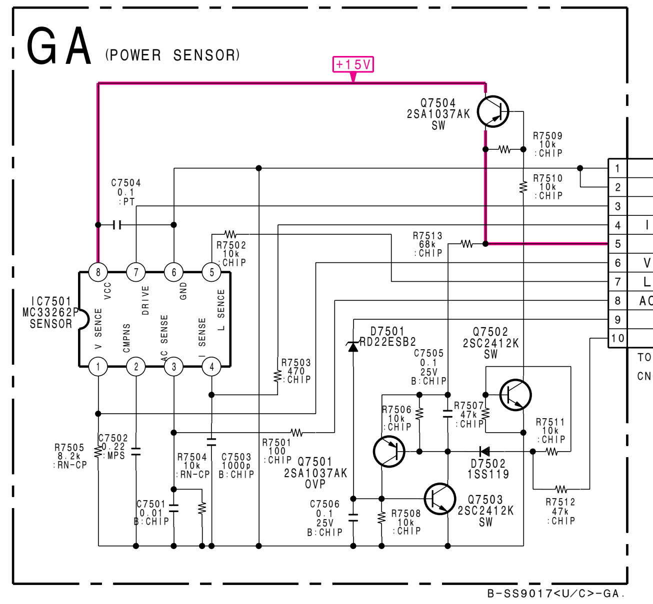
• D BOARD IC701 LA6510



• D BOARD VOLTAGE LIST

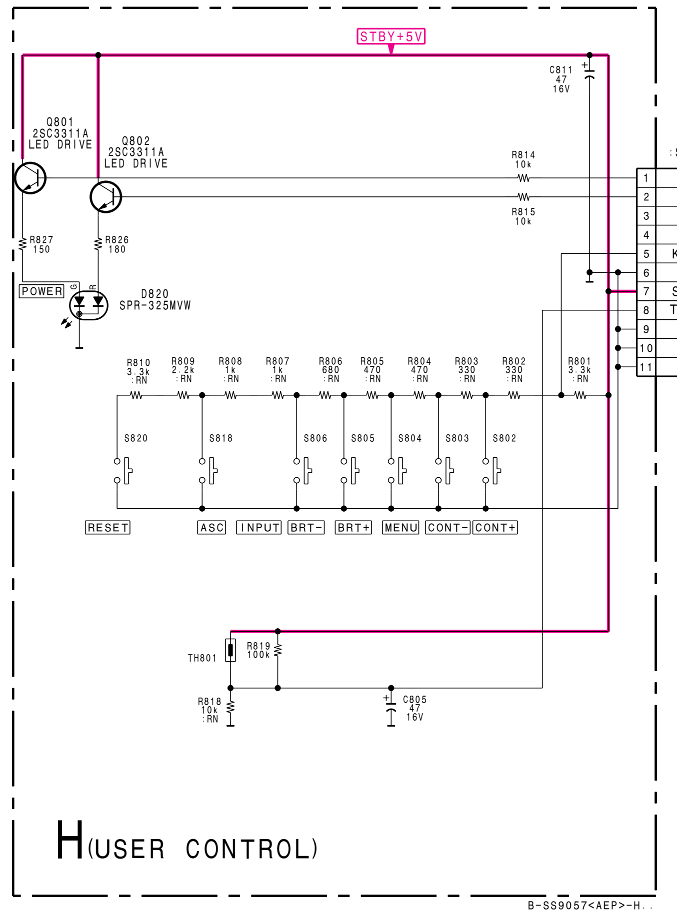
Ref.	Pin No.	Voltage [V]	Ref.	Pin No.	Voltage [V]
IC002	5	1.1		11	0
	6	4.2		12	11.2
	7	0		15	0
				16	8.4
IC004	5	4.8		19	9.2
	6	4.8			
IC005	1	0.4	Q003	B	5.1
	3	0		C	0
	7	1.5		E	5.7
	8	4.8	Q005	B	2.5
IC009	1	−0.1		C	0
	2	4.7		E	3.1
	3	4.5	Q501	B	11.2
	5	0.3		C	13.8
	6	0.3		E	10.8
	7	4.5	Q502	B	0.2
IC010	1	4.0		C	11.2
	3	3.0	Q503	B	11.2
	4	2.8		E	10.9
	5	2.3	Q504	B	2.5
	6	2.6		C	12.0
	7	0.6		E	2.5
	9	4.8	Q505	B	2.5
	10	4.8		E	2.4
	12	5.4	Q506	B	−14.0
	14	4.5		C	−0.2
	15	4.5		E	−14.0
	16	5.4	Q507	G	197.4
	17	1.0		D	41.8
	18	0	Q508	B	−1.4
	19	5.1		C	41.0
	20	3.7	Q509	B	0
	23	0.8		C	14.1
	24	2.5	Q510	B	4.5
	25	−0.1		E	3.9
	26	4.0	Q511	B	3.2
	27	4.0		C	33.5
	28	4.4		E	2.6
IC012	5	0.6	Q517	B	4.6
	6	3.9		E	5.1
	7	4.1	Q522	G	0
IC013	1	0		D	15.2
	2	4.9	Q523	G	4.7
	8	0.6		D	0
	9	3.6	Q524	G	4.7
	10	4.9		D	0
	11	0	Q525	G	4.7
	13	5.7		D	0
IC014	1	3.5	Q527	G	4.7
	3	3.5		D	0
	5	2.7	Q528	G	4.7
	9	0		D	0
	10	0.1	Q660	B	4.2
	12	4.9		C	0
	13	4.9		E	4.2
	14	3.2	Q661	B	0
	15	3.9		C	4.2
IC015	1	0.5	Q701	B	5.7
	2	4.2		C	36.0
	3	0.5		E	5.1
	4	0.5	Q703	B	37.9
	5	0		E	37.4
	6	0	Q704	B	37.4
	8	0		E	37.0
	9	0	Q705	B	36.0
	13	0		E	36.6
IC502	1	41.4	Q706	B	36.6
	2	41.4		E	37.0
	3	33.7	Q707	B	−0.6
	4	42.3		C	−5.0
	5	48.3		E	0
IC505	1	4.5	Q708	B	0.6
	2	0		C	477.0
	3	0	Q901	B	0.1
	5	0		C	9.9
	6	0	Q902	B	9.0
	7	−10.0		C	0
IC701	1	14.2		E	9.0
	2	14.2	Q904	B	8.6
	3	0		C	13.0
	4	3.6		E	8.4
	6	3.0	Q905	B	8.6
	7	3.0		E	8.4
	8	−0.7	Q908	G	196.6
	9	−0.7		D	40.1
IC702	2	0.4	Q909	G	8.4
	3	13.5		D	40.4
	4	1.2			
	5	1.2			
	7	−13.0			
IC703	1	1.2			
	2	1.6			
	3	1.6			
	5	2.8			
	6	2.8			
	7	2.8			
IC901	1	9.3			
	2	5.6			
	4	5.0			
	6	1.1			
	7	0.9			
	8	9.3			
	10	0			

(2) Schematic Diagrams of G, GA, H, J and L Boards

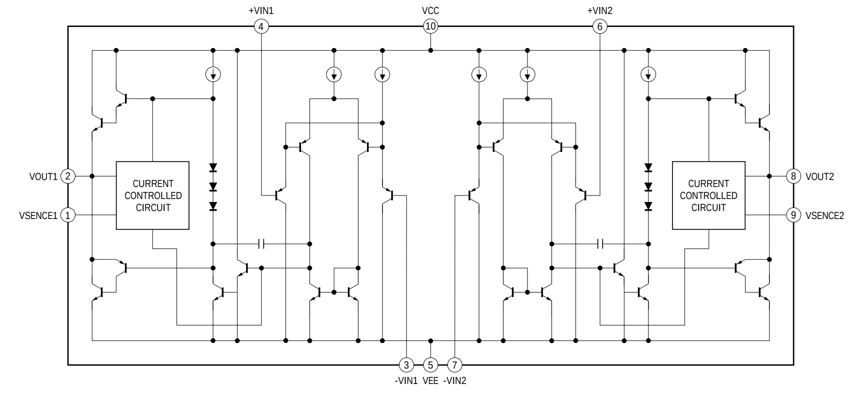


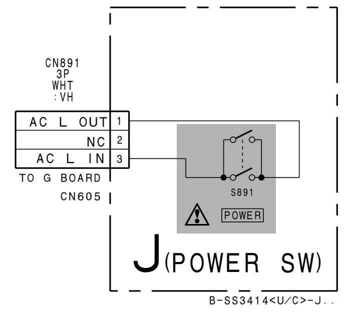
• **GA BOARD VOLTAGE LIST**

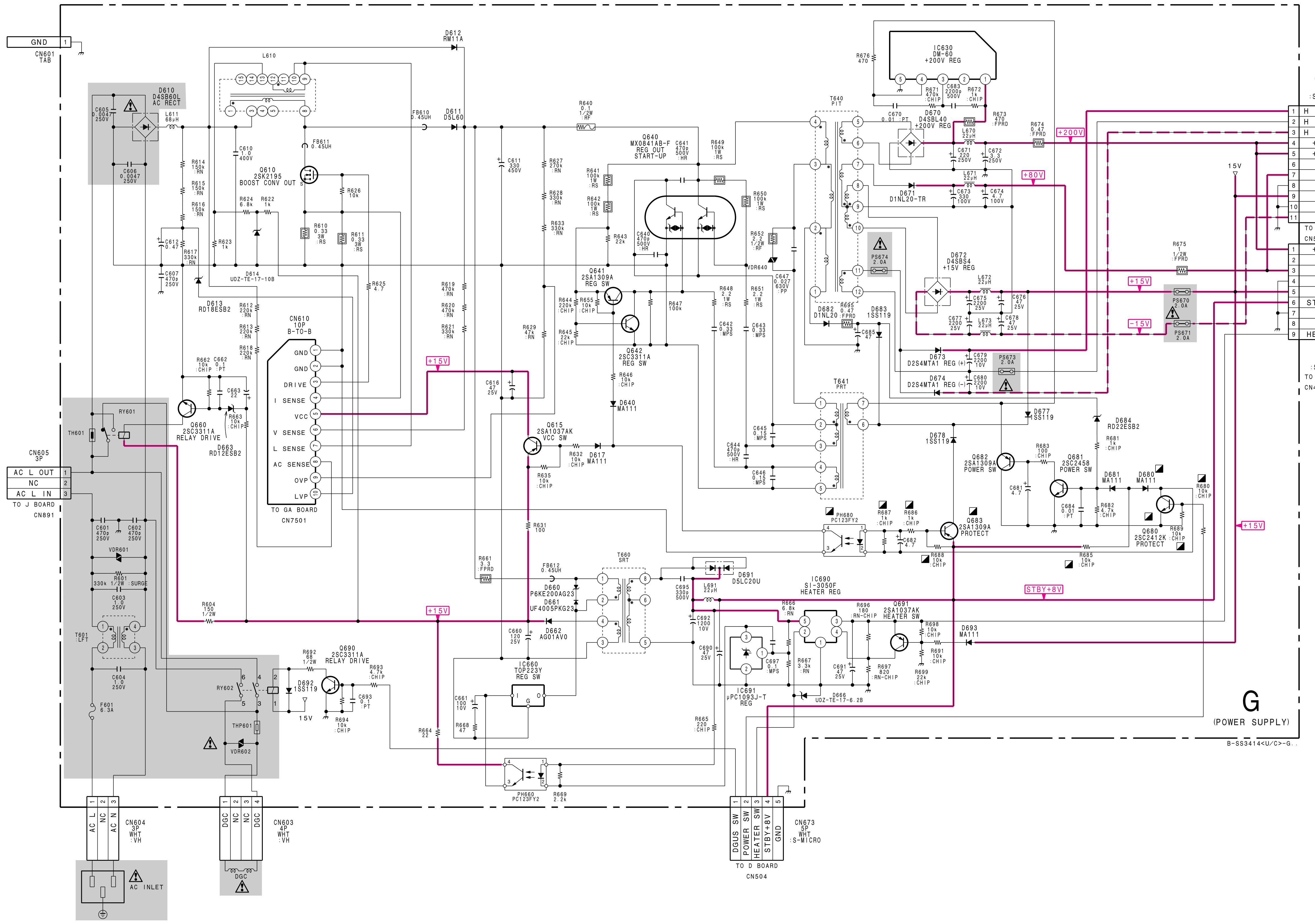
Ref.	Pin No.	Voltage [V]
IC7501	1 2 3 4 5 7	2.6 2.5 1.7 0.2 0 8.6
Q7501	B C E	14.0 0 14.0
Q7502	B C	0.7 0.1
Q7503	B C	0 14.0
Q7504	B	13.4



• **L BOARD IC5101, 5301, 5401 LA6510**

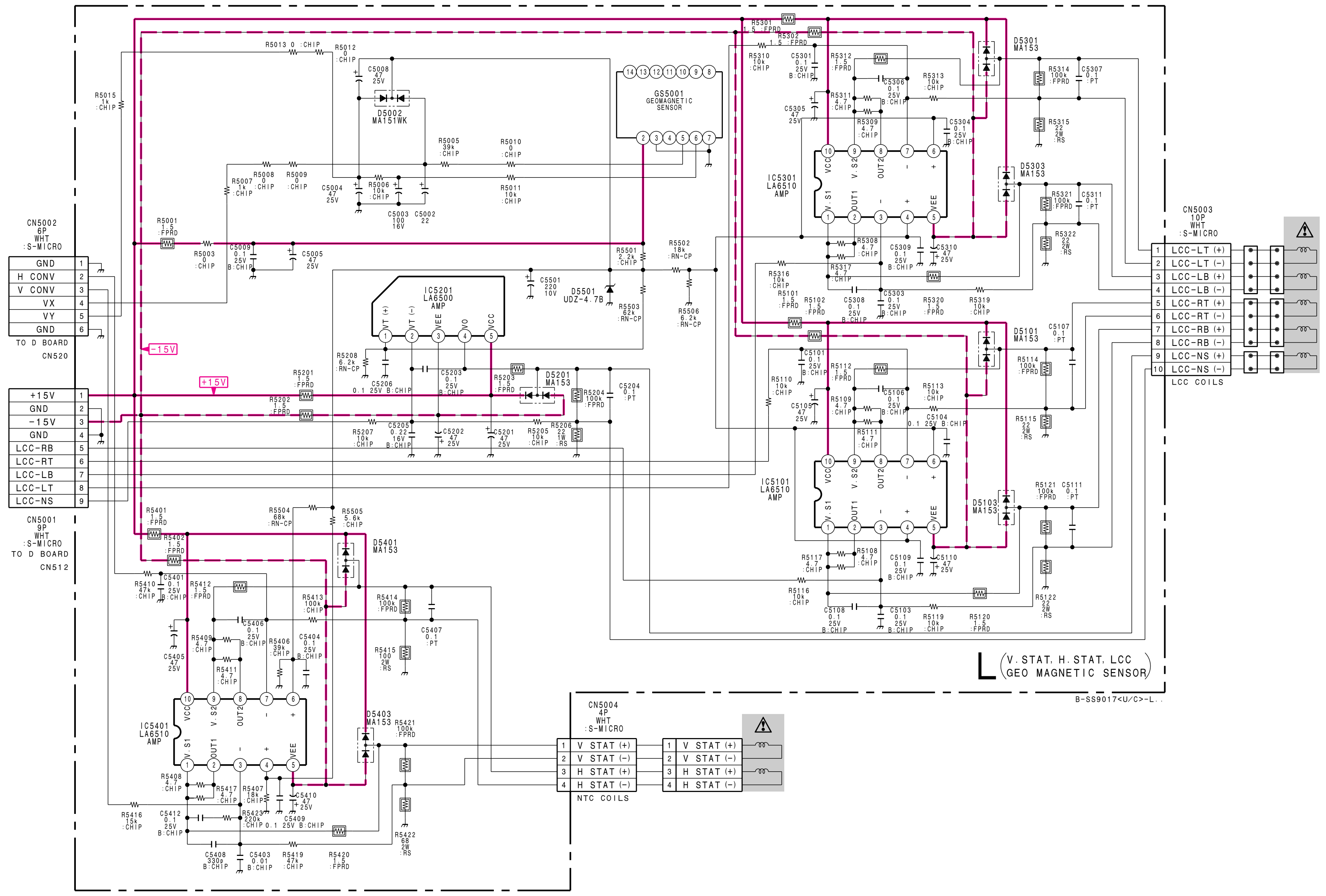






• **G BOARD VOLTAGE LIST**

Ref.	Pin No.	Voltage [V]
IC630	3 4	2.5 11.6
IC660	IN OUT	6.1 410.0
IC690	2 3 4	5.0 6.7 5.3
PH660	1 2 3 4	4.5 3.3 6.1 16.7
PH680	1 2 3 4	1.3 0.1 0 0.1
Q610	G D S	8.7 102.4 0.2
Q615	B C E	13.6 14.2 14.3
Q640	B1 C1 B2 C2 E2	–2.0 199.2 196.8 408.0 199.2
Q641	B C E	1.1 –2.0 2.0
Q642	B C	–1.8 –2.0
Q660	B C	0.9 0.3
Q680	B C	0.8 0
Q681	B C	0.3 11.7
Q682	B E	11.7 11.7
Q683	B C	7.5 8.3
Q690	B C	0 15.0
Q691	B C E	8.6 5.3 6.7



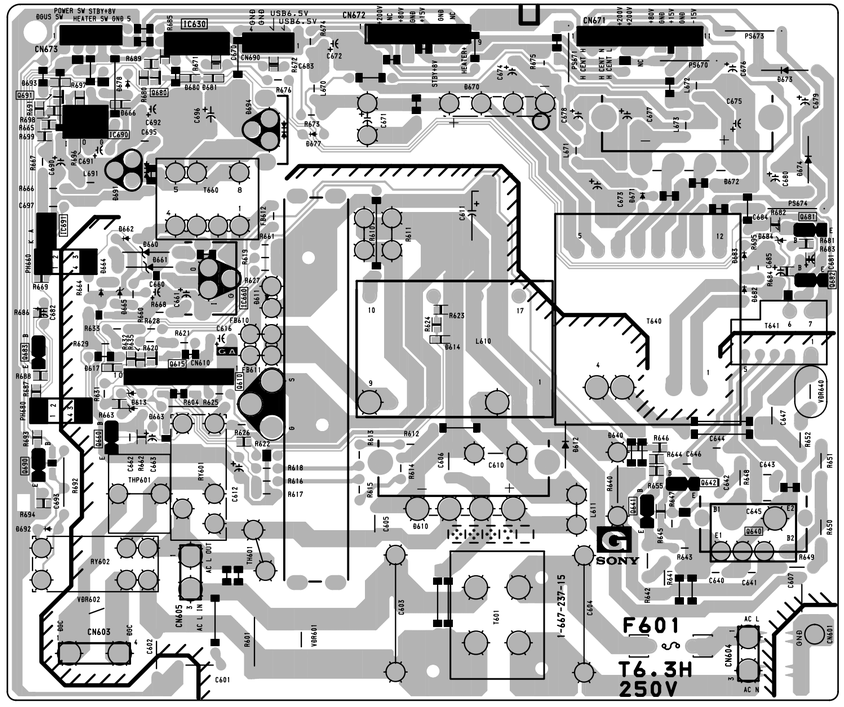
• **L BOARD VOLTAGE LIST**

Ref.	Pin No.	Voltage [V]
GS5001	5 6	2.8 2.8
IC5101	1 2 3 4 6 7 8 9	1.0 1.0 1.2 1.2 1.2 1.2 –0.2 –0.2
IC5201	1 2 4	1.2 1.2 1.1
IC5301	1 2 3 4 6 7 8 9	–0.2 –0.2 1.2 1.2 1.2 1.2 0.4 0.4
IC5401	1 2 3 4 6 7 8 9	0.6 0.6 3.4 3.4 1.8 1.8 0.4 0.4

Schematic diagram
← **D** board

Schematic diagrams
G GA H
J L boards →

— G BOARD —

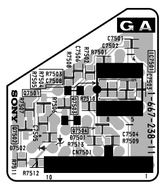


G BOARD
Terminal name of semiconductors in silk screen printed circuit (∗)

Ref.	∗
Q615, Q680, Q691	①
D614, D617, D640, D666, D680, D681, D693	③

∗: Refer to Terminal name of semiconductors in silk screen printed circuit (see page 5-9)

— GA BOARD —

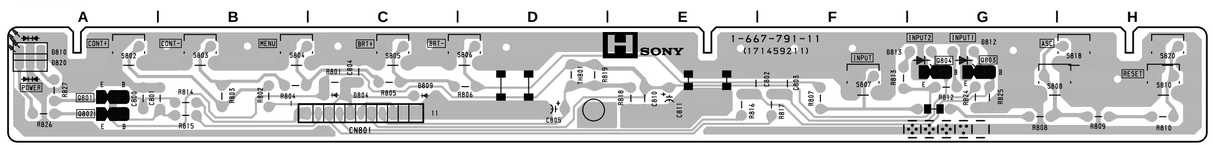


GA BOARD
Terminal name of semiconductors in silk screen printed circuit (∗)

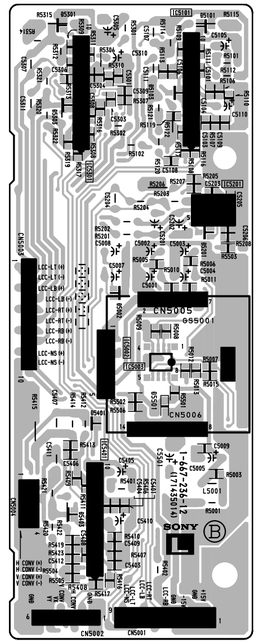
Ref.	∗
Q7501–Q7504	①

∗: Refer to Terminal name of semiconductors in silk screen printed circuit (see page 5-9)

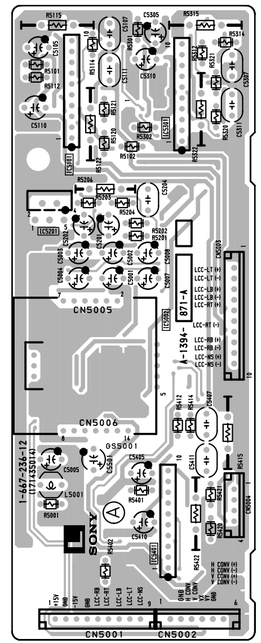
— H BOARD —



— L BOARD (Conductor Side) —



— L BOARD (Component Side) —

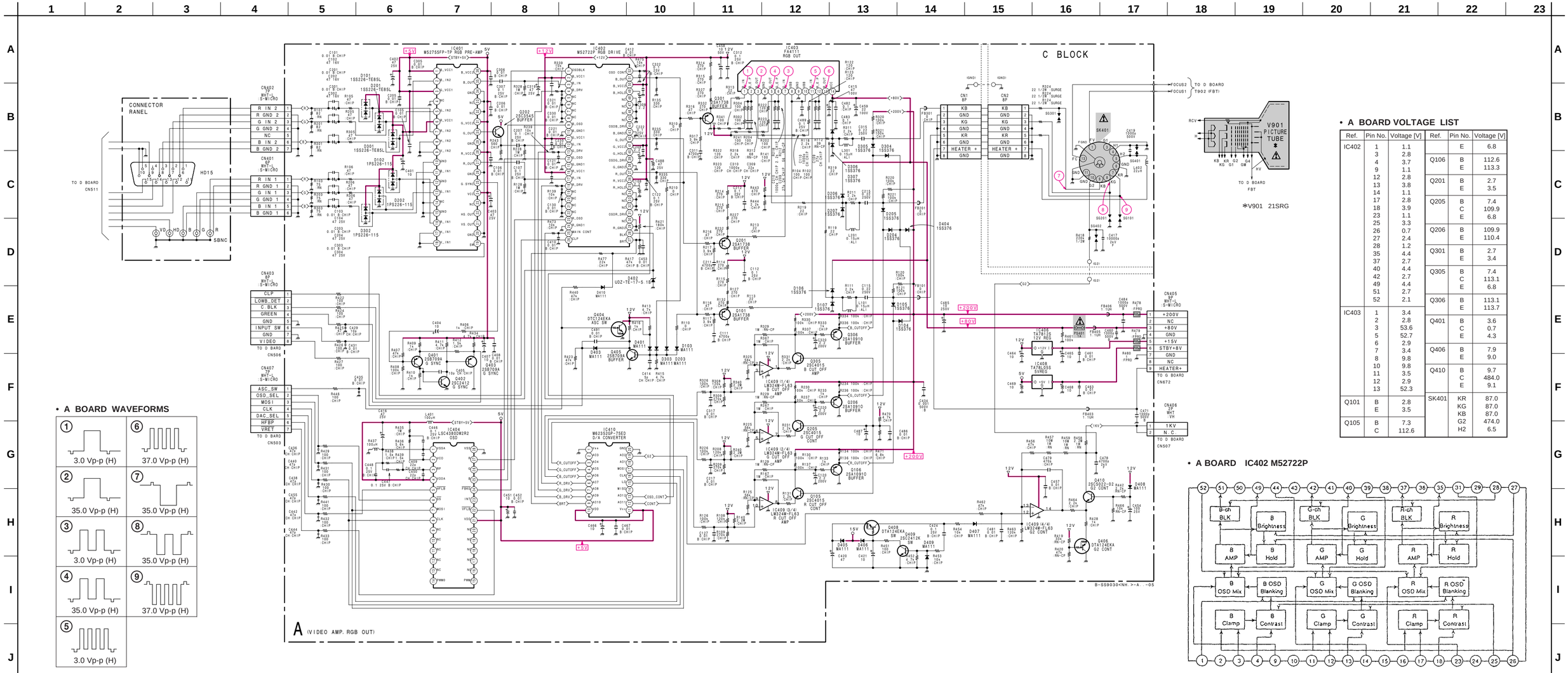


L BOARD
Terminal name of semiconductors in silk screen printed circuit (∗)

Ref.	∗
D5501	③
D5101, D5103, D5201, D5301, D5303, D5401, D5403	⑥
D5002	⑧

∗: Refer to Terminal name of semiconductors in silk screen printed circuit (see page 5-9)

Schematic diagram
A board →



• A BOARD WAVEFORMS

① 3.0 Vp-p (H)	⑥ 37.0 Vp-p (H)
② 35.0 Vp-p (H)	⑦ 35.0 Vp-p (H)
③ 3.0 Vp-p (H)	⑧ 35.0 Vp-p (H)
④ 35.0 Vp-p (H)	⑨ 37.0 Vp-p (H)
⑤ 3.0 Vp-p (H)	

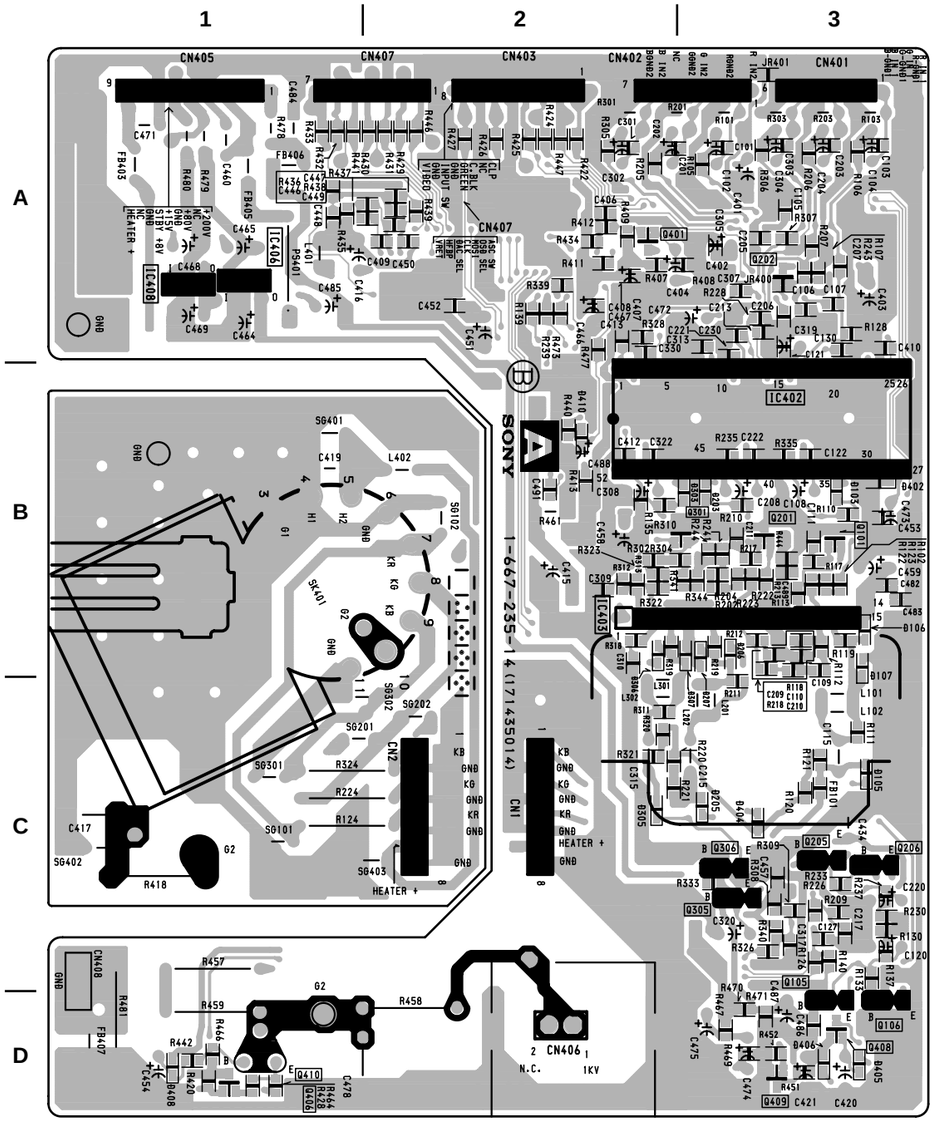
• A BOARD VOLTAGE LIST

Ref.	Pin No.	Voltage [V]	Ref.	Pin No.	Voltage [V]
IC402	1	1.1		E	6.8
	3	2.8	Q106	B	112.6
	4	3.7		E	113.3
	9	1.1	Q201	B	2.7
	12	2.8		E	3.5
	13	3.8	Q205	B	7.4
	14	1.1		C	109.9
	17	2.8		E	6.8
	18	3.9	Q206	B	109.9
	23	1.1		E	110.4
	25	3.3	Q301	B	2.7
	26	0.7		E	3.4
	27	2.4	Q305	B	7.4
	28	1.2		C	113.1
	35	4.4		E	6.8
	37	2.7	Q306	B	113.1
	40	4.4		E	113.7
	42	2.7	Q401	B	3.6
	49	4.4		C	0.7
	51	2.7		E	4.3
	52	2.1	Q406	B	7.9
IC403	1	3.4		E	9.0
	2	2.8	Q410	B	9.7
	3	53.6		C	484.0
	5	52.7		E	9.1
	6	2.9	SK401	KR	87.0
	7	3.4		KG	87.0
	8	9.8		KB	87.0
	10	9.8		G2	474.0
	11	3.5		H2	6.5
	12	2.9			
	13	52.3			
Q101	B	2.8			
	E	3.5			
Q105	B	7.3			
	C	112.6			

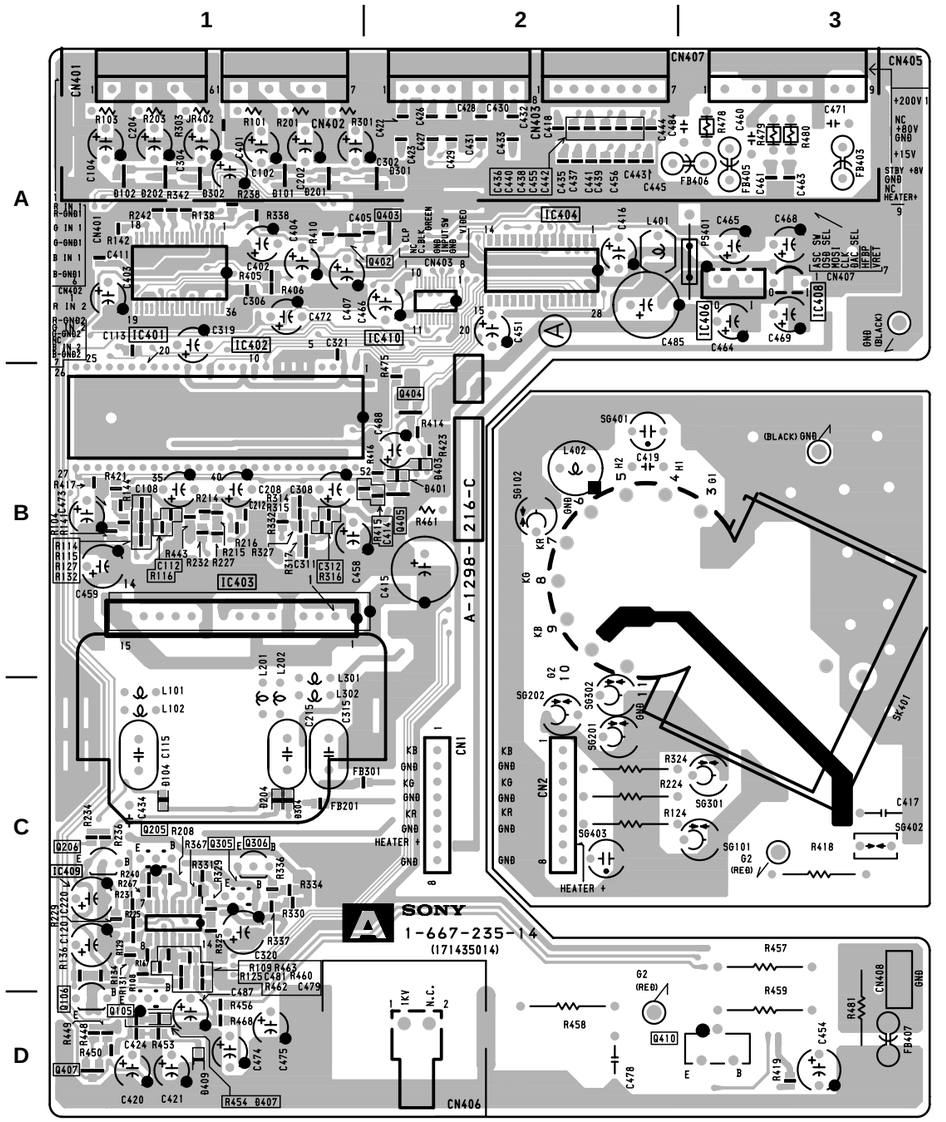
• A BOARD IC402 M52722P

A VIDEO AMP RGB OUT

— A BOARD (Conductor Side) —



— A BOARD (Component Side) —



• A BOARD SEMICONDUCTOR LOCATION

IC

	(Conductor Side)	(Component Side)
IC401		A–1
IC402	B–3	B–1
IC403	B–3	B–1
IC404		A–2
IC406	A–1	A–3
IC408	A–1	A–3
IC409		C–1
IC410		A–2

TRANSISTOR

	(Conductor Side)	(Component Side)	∗
Q101	B–3		①
Q105	D–3	D–1	–
Q106	D–3	D–1	–
Q201	B–3		①
Q202	A–3		①
Q205	C–3	C–1	–
Q206	C–3	C–1	–
Q301	B–3		①
Q305	C–3	C–1	–
Q306	C–3	C–1	–
Q401	A–2		①
Q402		A–1	②
Q403		A–2	②
Q404		B–2	②
Q405		B–2	②
Q406	D–1		①
Q408	D–3		①
Q409	D–3		①
Q410	D–1	D–3	–

DIODE

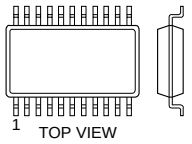
	(Conductor Side)	(Component Side)	∗
D101		A–1	⑦
D102		A–1	⑦
D103	B–3		③
D104		C–1	③
D105	C–3		③
D106	B–3		③
D107	B–3		③
D201		A–1	⑦
D202		A–1	⑦
D203	B–3		③
D204		C–1	③
D205	C–3		③
D206	B–3		③
D207	B–3		③
D301		A–2	⑦
D302		A–1	⑦
D303	B–3		③
D304		C–1	③
D305	C–2		③
D306	B–2		③
D307	B–3		③
D401		B–2	③
D402	B–3		③
D403		B–2	③
D404	C–3		③
D405	D–3		③
D406	D–3		③
D407		D–1	③
D408	D–1		③
D409		D–1	③
D410	B–2		③

∗: Refer to Terminal name of semiconductors in silk screen printed circuit (see page 5-9)

NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

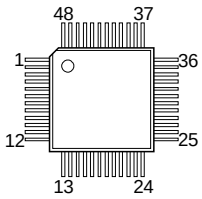
5-4. SEMICONDUCTORS

BA9756FS-E2
M62352GP-75E
M62352GP-75ED

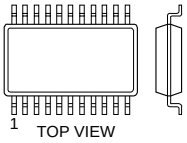


20 pin SOP

CXA2043Q

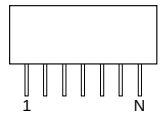


CXA2044M-T6
LSC4380DW2R2



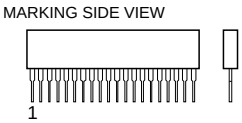
28 pin SOP

DM-60



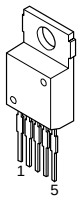
• pin 1 N = 5
• Mt (one side, both side)

FA4111

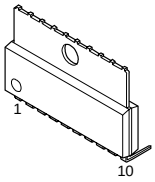


14 pin SIP

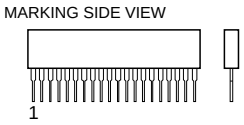
LA6500-FA



LA6510

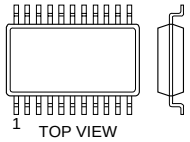


LA7841L



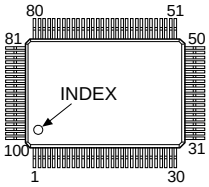
7 pin SIP

LM324M
TC74HCT04AF

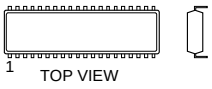


14 pin SOP

MB90553PF-G-120-BND

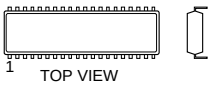


MC33262P
MM1170BFB



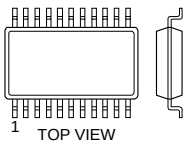
8 pin DIP

M52722P



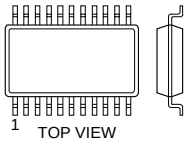
52 pin DIP

M52755FP-TP



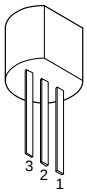
36 pin SOP

NJM4558M
µPC4558G2
24LC16BT/SN
24LC21AT/SN

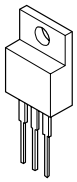


8 pin SOP

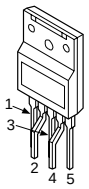
NJM78L05A
NJM78L09A
TA78L05S
TA78L09S



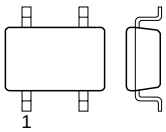
NJM78M09FA
TA7805S
TA7812S



SI-3050F

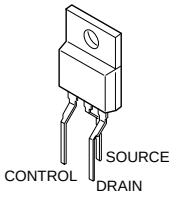


TC7W04FU

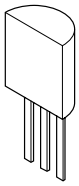


5 pin CHIP

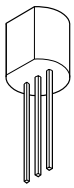
TOP223Y-BB



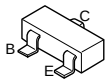
µPC1093J



µPC78L05J



DTA114GKAT146
DTA124EKA-T146
DTC114GKA
DTC114GKAT146
DTC124EK
DTC124EKA-T146
2SA1036K-Q
2SA1036K-T-146-Q
2SA1037AK-T146-QR
2SA1037AK-T146-R
2SA1037K-T-146-QR
2SA1162G
2SA1462-Y33
2SA1738-TX
2SB709A-QRS-TX
2SC1623-L5L6
2SC2411K-CQ
2SC2411K-T-146-CQ
2SC2412K-T-146-QR
2SC3545-T43



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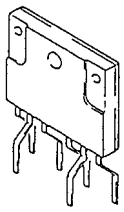

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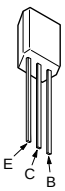
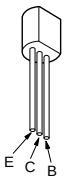
2SC2458-YGR
2SC2459-GR



2SA1091-O
2SC2362K-G



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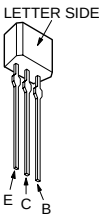
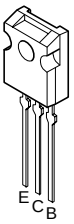
2SA1309A-QRSTA
2SC2784
2SC2785-HFE
2SC3311A-QRSTA

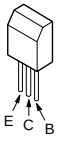


2SA1358-Y
2SC3421-Y



2SC2362KG-AA

2SC3209LK



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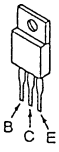
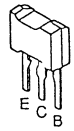
2SC5022-02
2SJ449
2SJ449 (1)
2SJ449 (2)



2SC4015TV2



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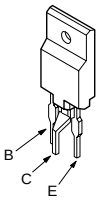

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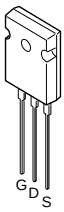
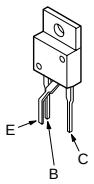
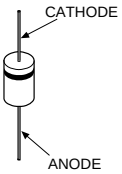
2SK2098-01MR



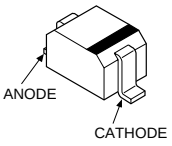
2SK2195F04



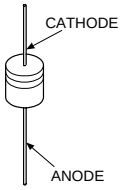
AG01A-V0
ERA91-02
S2LA20F



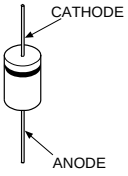
DTZ-TT11-16B
DTZ10B
DTZ13B
DTZ24B
DTZ33B
DTZ4.7C
DTZ5.1B
MA111
RD12SB2
RD5.6SB
UDZ-TE-17-10B
UDZ-TE-17-12B
UDZ-TE-17-13B
UDZ-TE-17-16B
UDZ-TE-17-24B
UDZ-TE-17-33B
UDZ-TE-17-4.7B
UDZ-TE-17-5.1B
UDZ-TE-17-5.6B
UDZ-TE-17-6.2B



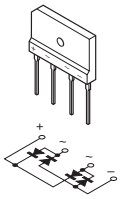
D1NL20-TR
GMA01
RD12ES-B2
RD16ES-B2
RD16ES-B3
RD18ES-B2
RD22ES-B2
RD5.1ES-B2
RD6.2ESB2
1SS119-25TD
1SS119-25
1SS120TD



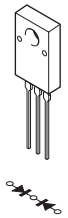
D2S4MF
D2S4MTA1



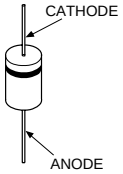
D4SBS4
D4SBS4-F
D4SBL40
D4SB60L



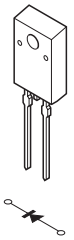
D5LC20U



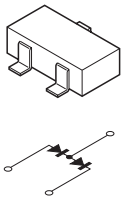
EGP20G
ERA34-10
RGP02-17EL-6433
RGP02-17PKG23
RGP02-20EG23
RGP02-20EL-6394
RGP15GPKG23
UF4005PKG23



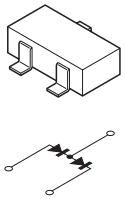
FMQ-G5GS
D5L60



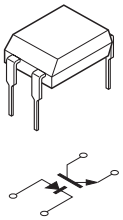
MA151WK
1SS184



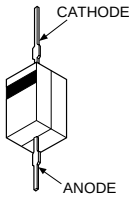
MA153-TX
1SS226



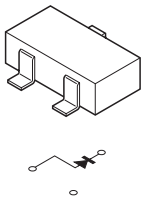
PC123F2
PC123FY2



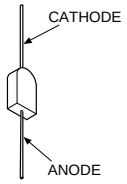
P6KE200AG23



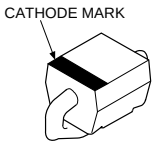
RD6.2M-B1



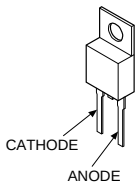
RM11A
RM11C



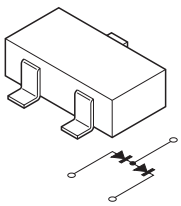
SB560



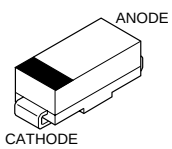
YG911S3R



1PS226-115



1SS376TE-17



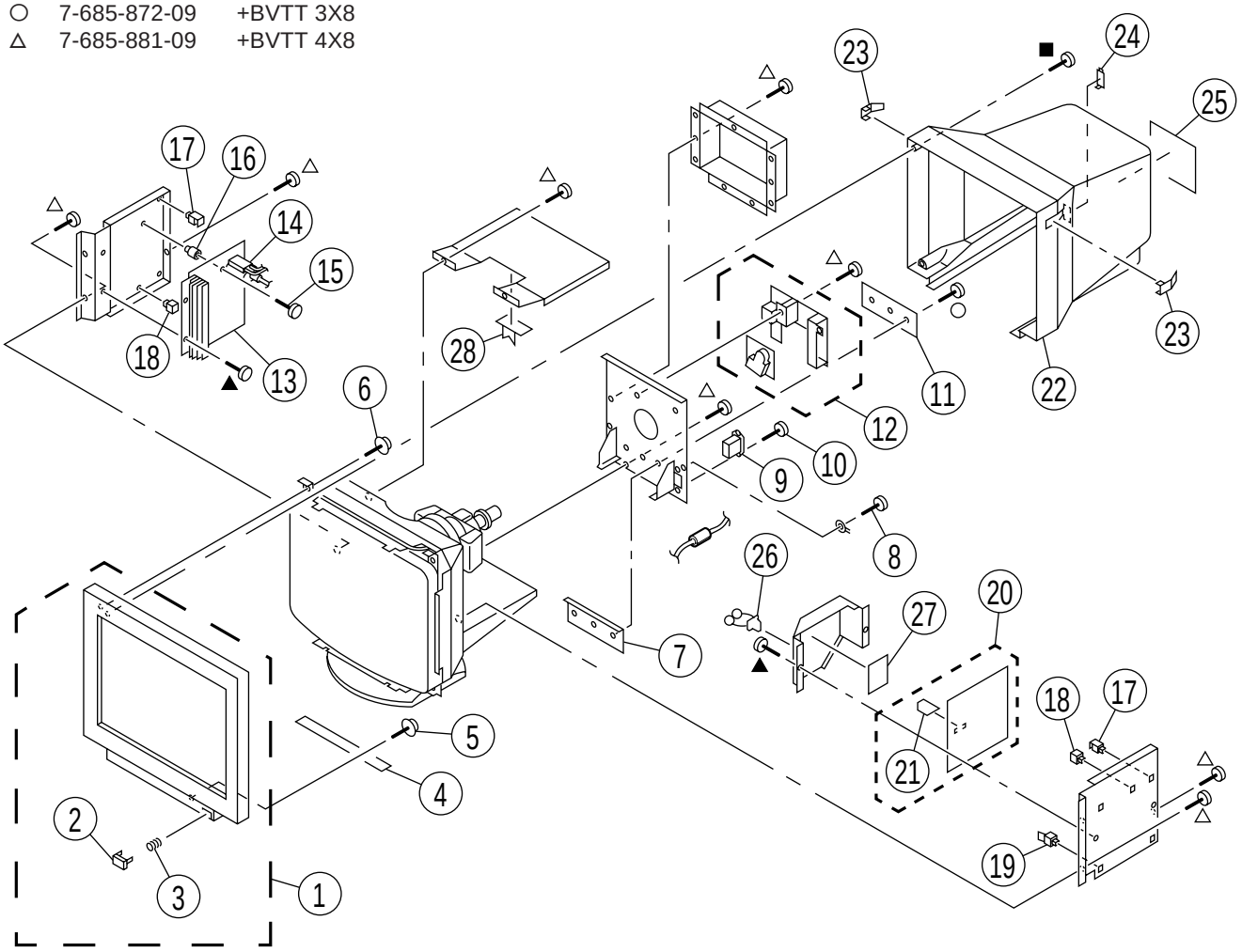
SECTION 6
EXPLODED VIEWS

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. CHASSIS

▲ 7-685-647-79 +BVTP 3X10
■ 7-685-663-71 +BVTP 4X16
○ 7-685-872-09 +BVTT 3X8
△ 7-685-881-09 +BVTT 4X8

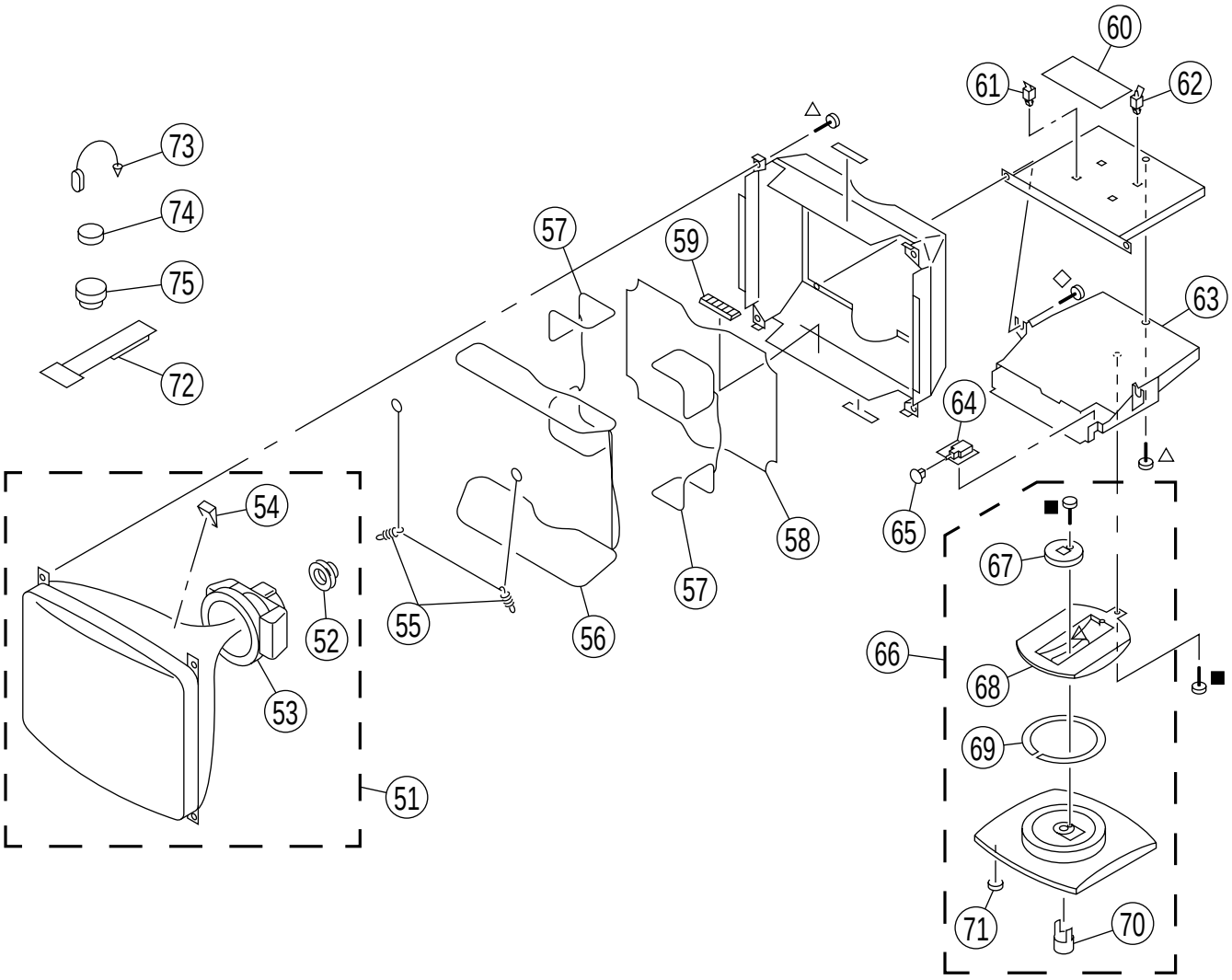


REF.NO.	PART NO.	DESCRIPTION	REMARK
1	*X-4035-957-1	BEZEL ASSY	2, 3
2	*4-061-970-51	BUTTON, POWER	
3	4-042-593-01	SPRING, COMPRESSION	
4	*8-933-283-00	H BOARD, COMPLETE	
5	4-029-432-01	SCREW (3X12), (+) BVWHTP	
6	4-365-808-01	SCREW (5), TAPPING	
7	*1-694-313-12	TERMINAL BOARD ASSY, I/O	
8	4-389-025-01	SCREW (M4) (EXT TOOTH WASHER)	
9	⚠1-251-382-11	INLET, AC 3P(WITH NOISE FILTE)	
10	4-052-345-01	SCREW, (3X8) (+K), TAPPING	
11	4-060-368-12	SHEET, CONNECTOR	
12	*8-933-296-00	A BOARD, COMPLETE	
13	*8-933-311-00	D BOARD, COMPLETE	
14	⚠X-4035-170-1	TRANSFORMER ASSY, FLYBACK (NX-4142//J1D4)	
15	4-062-115-01	SCREW +P 3.5X20 TYPE2	
16	*4-060-359-01	HOLDER, PRINTED CIRCUIT BOARD	
17	*3-701-903-11	HOLDER, PRINTED CIRCUIT BOARD	
18	*4-382-848-01	HOLDER, PRINTED CIRCUIT BOARD	
19	*3-703-141-00	HOLDER, PRINTED CIRCUIT BOARD	
20	*8-933-277-00	G BOARD, COMPLETE	21
21	*8-933-269-00	GA BOARD, COMPLETE	
22	*4-061-604-61	CABINET	
23	*4-061-605-61	COVER, SCREW	
24	*4-060-358-71	COVER, ECS	
25	*4-066-979-01	LABEL, INFORMATION	
26	2-132-434-01	CLIP, WIRE	
27	*4-061-694-01	SHEET, INSULATE	
28	*4-063-711-01	SUPPORT, HV CABLE	

6-2. PICTURE TUBE

■ 7-685-663-71 +BVTP 4X16
△ 7-685-881-09 +BVTT 4X8
◇ 7-685-883-01 +BVTT 4X12

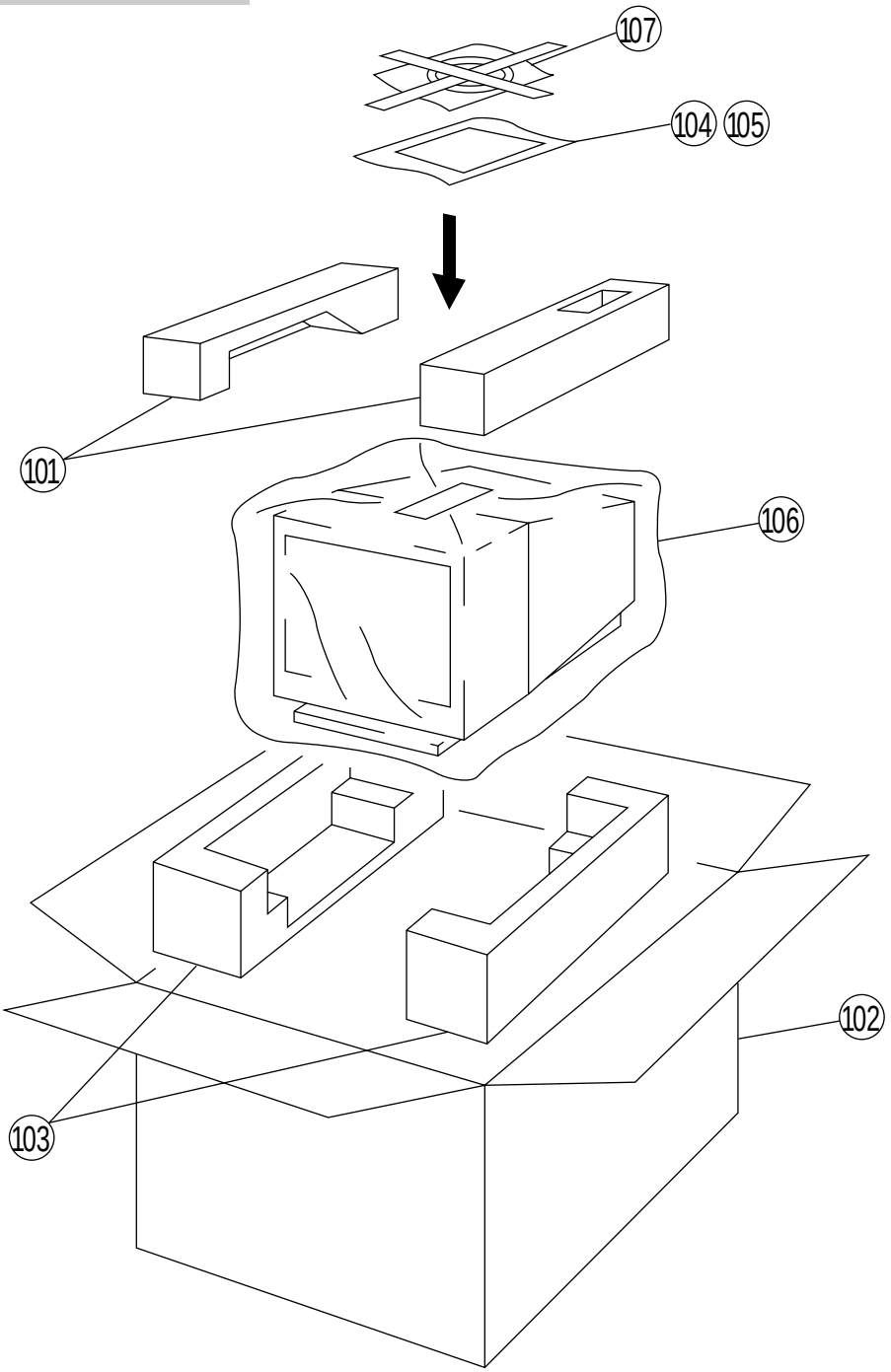
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.



REF.NO.	PART NO.	DESCRIPTION	REMARK
51	⚠8-738-796-81	ITC ASSY (21SRG-R2)	52-54
52	⚠1-452-932-11	NECK ASSEMBLY, PICTURE TUBE	
53	⚠8-451-493-41	DEFLECTION YOKE (Y21SRL-M4)	
54	4-050-492-01	SPACER, DY	
55	*4-047-316-01	SPRING, TENSION	
56	⚠1-416-437-11	COIL, DEMAGNETIC	
57	⚠1-416-140-31	COIL, LANDING CORRECTION	
58	⚠1-416-438-31	COIL, LANDING CORRECTION	
59	4-062-670-01	SPACER, PICTURE TUBE	
60	*8-933-297-00	L BOARD, COMPLETE	
61	*4-321-929-00	HOLDER, PRINTED CIRCUIT BOARD	
62	*3-703-141-00	HOLDER, PRINTED CIRCUIT BOARD	
63	*4-061-603-71	COVER, BOTTOM	
64	*8-933-279-00	J BOARD, COMPLETE	
65	4-031-646-01	SHAFT	
66	*X-4035-959-1	STAND ASSY	67-71
67	4-061-396-01	STOPPER (A)	
68	*4-061-938-81	SLIDER	
69	4-063-397-01	RING, TILT SWIVEL	
70	4-041-621-01	STOPPER (B)	
71	4-047-474-01	FOOT, RUBBER	
72	4-051-736-21	PIECE A (90), CONV.CORRECT	
73	4-308-870-00	CLIP, LEAD WIRE	
74	1-452-032-00	MAGNET, DISK ; 10mmϕ	
75	1-452-094-00	MAGNET, ROTATABLE DISK ; 15mmϕ	

6-3. PACKING MATERIALS

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.



REF.NO.	PART NO.	DESCRIPTION	REMARK
101	* 4-061-809-01	CUSHION (UPPER) (ASSY)	
102	* 4-066-565-01	INDIVIDUAL CARTON	
103	* 4-061-810-01	CUSHION (LOWER) (ASSY)	
104	* 3-864-571-11	MANUAL, INSTRUCTION	
105	⚠ 1-765-719-21	CORD SET, POWER (10A/250V)	
106	* 4-041-927-31	BAG, POLYETHYLENE	
107	1-777-743-11	CABLE ASSY (15P D SUB X2 CONNECTOR)	

MEMO

SECTION 7
ELECTRICAL PARTS LIST

A

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- CAPACITORS
  MF : µF
- COILS
  UH : µH

REF.NO.	PART NO.	DESCRIPTION			REMARK
*	8-933-296-00	A BOARD, COMPLETE			
		**********			
	4-382-854-11	SCREW (M3X10), P, SW (+) (IC403)			
		<CAPACITOR>			
C101	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C102	1-104-664-11	ELECT	47MF	20% 25V	
C103	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C104	1-104-664-11	ELECT	47MF	20% 25V	
C105	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C106	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C107	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C108	1-107-903-11	ELECT	2.2MF	20% 50V	
C109	1-163-237-11	CERAMIC CHIP	27PF	5% 50V	
C110	1-163-275-11	CERAMIC CHIP	0.001MF	5% 50V	
C111	1-163-017-00	CERAMIC CHIP	0.0047MF	10% 50V	
C112	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C115	1-104-514-11	FILM	0.22MF	10% 250V	
C120	1-107-949-11	ELECT	2.2MF	20% 200V	
C121	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C122	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C127	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C130	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C201	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C202	1-104-664-11	ELECT	47MF	20% 25V	
C203	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C204	1-104-664-11	ELECT	47MF	20% 25V	
C205	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C206	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C207	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C208	1-107-903-11	ELECT	2.2MF	20% 50V	
C209	1-163-237-11	CERAMIC CHIP	27PF	5% 50V	
C210	1-163-275-11	CERAMIC CHIP	0.001MF	5% 50V	
C211	1-163-017-00	CERAMIC CHIP	0.0047MF	10% 50V	
C212	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C215	1-104-514-11	FILM	0.22MF	10% 250V	
C217	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C220	1-107-949-11	ELECT	2.2MF	20% 200V	
C221	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C222	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C230	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C301	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C302	1-104-664-11	ELECT	47MF	20% 25V	
C303	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C304	1-104-664-11	ELECT	47MF	20% 25V	
C305	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C306	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C307	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C308	1-107-903-11	ELECT	2.2MF	20% 50V	
C309	1-163-235-11	CERAMIC CHIP	22PF	5% 50V	
C310	1-163-275-11	CERAMIC CHIP	0.001MF	5% 50V	
C311	1-163-017-00	CERAMIC CHIP	0.0047MF	10% 50V	
C312	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C315	1-104-514-11	FILM	0.22MF	10% 250V	
C317	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C319	1-107-888-11	ELECT	47MF	20% 25V	
C320	1-107-949-11	ELECT	2.2MF	20% 200V	
C321	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C322	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C330	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C401	1-126-964-11	ELECT	10MF	20% 50V	
C402	1-104-664-11	ELECT	47MF	20% 25V	
C403	1-104-664-11	ELECT	47MF	20% 25V	
C404	1-126-964-11	ELECT	10MF	20% 50V	
C405	1-163-227-11	CERAMIC CHIP	10PF	0.5PF 50V	
C407	1-126-964-11	ELECT	10MF	20% 50V	
C408	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C409	1-163-235-11	CERAMIC CHIP	22PF	5% 50V	
C410	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C412	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C414	1-163-222-11	CERAMIC CHIP	5PF	0.25PF 50V	
C415	1-128-562-11	ELECT	47MF	20% 100V	
C416	1-104-664-11	ELECT	47MF	20% 25V	
C417	1-115-349-51	CERAMIC	0.01MF	2KV	
C419	1-162-318-11	CERAMIC	0.001MF	10% 500V	
C420	1-126-967-11	ELECT	47MF	20% 50V	
C421	1-126-964-11	ELECT	10MF	20% 50V	
C424	1-164-004-11	CERAMIC CHIP	0.1MF	10% 25V	
C429	1-163-227-11	CERAMIC CHIP	10PF	0.5PF 50V	
C431	1-163-021-91	CERAMIC CHIP	0.01MF	10% 50V	
C434	1-162-318-11	CERAMIC	0.001MF	10% 500V	

A

REF.NO.	PART NO.	DESCRIPTION	REMARK
C435	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C436	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C438	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C440	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C442	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C443	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C444	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C445	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C446	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C447	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C448	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C450	1-163-235-11	CERAMIC CHIP 22PF 5% 50V	
C451	1-126-964-11	ELECT 10MF 20% 50V	
C452	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C453	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C454	1-104-665-11	ELECT 100MF 20% 25V	
C455	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C457	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C458	1-126-964-11	ELECT 10MF 20% 50V	
C459	1-107-930-91	ELECT 22MF 20% 100V	
C460	1-162-318-11	CERAMIC 0.001MF 10% 500V	
C461	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C463	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C464	1-107-906-11	ELECT 10MF 20% 50V	
C465	1-107-906-11	ELECT 10MF 20% 50V	
C466	1-126-964-11	ELECT 10MF 20% 50V	
C467	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C468	1-126-964-11	ELECT 10MF 20% 50V	
C469	1-126-964-11	ELECT 10MF 20% 50V	
C471	1-162-318-11	CERAMIC 0.001MF 10% 500V	
C478	1-115-350-51	CERAMIC 0.0047MF 2KV	
C479	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C481	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C482	1-115-339-11	CERAMIC CHIP 0.1MF 10% 50V	
C483	1-115-339-11	CERAMIC CHIP 0.1MF 10% 50V	
C484	1-162-318-11	CERAMIC 0.001MF 10% 500V	
C485	1-107-652-11	ELECT 10MF 20% 250V	
C486	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C487	1-126-964-11	ELECT 10MF 20% 50V	
C488	1-104-664-11	ELECT 47MF 20% 25V	
C489	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C491	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
		<CONNECTOR>	
CN401*	1-564-521-11	PLUG, CONNECTOR 6P	
CN402*	1-564-522-11	PLUG, CONNECTOR 7P	
CN403	1-564-523-11	PLUG, CONNECTOR 8P	
CN405	1-564-524-11	PLUG, CONNECTOR 9P	
CN406*	1-766-179-11	PIN, CONNECTOR (PC BOARD) 2P	
CN407*	1-564-522-11	PLUG, CONNECTOR 7P	
		<DIODE>	
D101	8-719-062-51	DIODE 1PS226-115	
D102	8-719-062-51	DIODE 1PS226-115	
D103	8-719-404-49	DIODE MA111	
D104	8-719-052-12	DIODE 1SS376TE-17	
D105	8-719-052-12	DIODE 1SS376TE-17	
D106	8-719-052-12	DIODE 1SS376TE-17	
D107	8-719-052-12	DIODE 1SS376TE-17	
D201	8-719-062-51	DIODE 1PS226-115	
D202	8-719-062-51	DIODE 1PS226-115	
D203	8-719-404-49	DIODE MA111	
D204	8-719-052-12	DIODE 1SS376TE-17	
D205	8-719-052-12	DIODE 1SS376TE-17	
D206	8-719-052-12	DIODE 1SS376TE-17	
D207	8-719-052-12	DIODE 1SS376TE-17	
D301	8-719-062-51	DIODE 1PS226-115	
D302	8-719-062-51	DIODE 1PS226-115	
D303	8-719-404-49	DIODE MA111	
D304	8-719-052-12	DIODE 1SS376TE-17	
D305	8-719-052-12	DIODE 1SS376TE-17	
D306	8-719-052-12	DIODE 1SS376TE-17	
D307	8-719-052-12	DIODE 1SS376TE-17	
D401	8-719-404-49	DIODE MA111	
D402	8-719-976-99	ZENER DIODE DTZ5.1B	
D403	8-719-404-49	DIODE MA111	
D404	8-719-052-12	DIODE 1SS376TE-17	
D405	8-719-404-49	DIODE MA111	
D406	8-719-404-49	DIODE MA111	
D407	8-719-404-49	DIODE MA111	
D408	8-719-404-49	DIODE MA111	
D409	8-719-404-49	DIODE MA111	
D410	8-719-404-49	DIODE MA111	
		<FERRITE BEAD>	
FB101	1-216-295-91	SHORT 0	
FB201	1-216-295-91	SHORT 0	
FB301	1-216-295-91	SHORT 0	
FB403	1-412-911-31	INDUCTOR, FERRITE BEAD	1.1UH
FB405	1-412-911-31	INDUCTOR, FERRITE BEAD	1.1UH
FB406	1-412-911-31	INDUCTOR, FERRITE BEAD	1.1UH
		<IC>	
IC401	8-759-522-86	IC M52755FP-TP	
IC402	8-759-468-63	IC M52722P	
IC403	8-749-013-74	IC FA4111	
IC404	8-759-525-20	IC LSC4380DW2R2	
IC406	8-759-231-58	IC TA7812S	
IC408	8-759-239-14	IC TA78L05S	
IC409	8-759-502-82	IC LM324M	
IC410	8-759-635-27	IC M62352GP-75E	
		<COIL>	
L101	1-412-478-11	INDUCTOR 0.15UH	
L201	1-412-478-11	INDUCTOR 0.15UH	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION			REMARK
L301	1-412-478-11	INDUCTOR	0.15UH		
L401	1-408-615-31	INDUCTOR	100UH		
L402	1-412-529-11	INDUCTOR	22UH		
		<IC LINK>			
PS401	⚠1-533-590-31	LINK, IC (1A/90V AC, 60V DC)			
		<TRANSISTOR>			
Q101	8-729-112-65	TRANSISTOR	2SA1462-Y33		
Q105	8-729-041-66	TRANSISTOR	2SC4015TV2		
Q106	8-729-200-17	TRANSISTOR	2SA1091-O		
Q201	8-729-112-65	TRANSISTOR	2SA1462-Y33		
Q202	8-729-107-31	TRANSISTOR	2SC3545-T43		
Q205	8-729-041-66	TRANSISTOR	2SC4015TV2		
Q206	8-729-200-17	TRANSISTOR	2SA1091-O		
Q301	8-729-112-65	TRANSISTOR	2SA1462-Y33		
Q305	8-729-041-66	TRANSISTOR	2SC4015TV2		
Q306	8-729-200-17	TRANSISTOR	2SA1091-O		
Q401	8-729-216-22	TRANSISTOR	2SA1162-G		
Q402	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q403	8-729-216-22	TRANSISTOR	2SA1162-G		
Q404	8-729-901-00	TRANSISTOR	DTC124EK		
Q405	8-729-216-22	TRANSISTOR	2SA1162-G		
Q406	8-729-027-31	TRANSISTOR	DTA124EKA-T146		
Q408	8-729-027-31	TRANSISTOR	DTA124EKA-T146		
Q409	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q410	8-729-032-61	TRANSISTOR	2SC5022-02		
		<RESISTOR>			
R101	1-215-395-00	METAL	82	1%	1/4W
R102	1-216-025-91	RES,CHIP	100	5%	1/10W
R103	1-215-395-00	METAL	82	1%	1/4W
R104	1-216-025-91	RES,CHIP	100	5%	1/10W
R105	1-216-017-91	RES,CHIP	47	5%	1/10W
R106	1-216-017-91	RES,CHIP	47	5%	1/10W
R108	1-216-099-00	RES,CHIP	120K	5%	1/10W
R109	1-216-107-00	RES,CHIP	270K	5%	1/10W
R110	1-216-295-91	SHORT	0		
R111	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R112	1-216-617-11	METAL CHIP	39	0.50%	1/10W
R113	1-216-009-00	RES,CHIP	22	5%	1/10W
R114	1-216-035-00	RES,CHIP	270	5%	1/10W
R115	1-216-035-00	RES,CHIP	270	5%	1/10W
R116	1-216-017-91	RES,CHIP	47	5%	1/10W
R117	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R118	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R119	1-216-009-00	RES,CHIP	22	5%	1/10W
R120	1-216-097-91	RES,CHIP	100K	5%	1/10W
R121	1-216-097-91	RES,CHIP	100K	5%	1/10W
R122	1-216-027-00	RES,CHIP	120	5%	1/10W
R123	1-216-027-00	RES,CHIP	120	5%	1/10W
R124	1-219-497-11	CARBON	22	5%	1/2W
R125	1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R126	1-216-097-91	RES,CHIP	100K	5%	1/10W
R127	1-216-035-00	RES,CHIP	270	5%	1/10W
R128	1-216-121-91	RES,CHIP	1M	5%	1/10W
R129	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R130	1-216-097-91	RES,CHIP	100K	5%	1/10W
R131	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R132	1-216-035-00	RES,CHIP	270	5%	1/10W
R133	1-216-049-91	RES,CHIP	1K	5%	1/10W
R134	1-216-097-91	RES,CHIP	100K	5%	1/10W
R135	1-216-037-00	RES,CHIP	330	5%	1/10W
R136	1-216-097-91	RES,CHIP	100K	5%	1/10W
R137	1-216-097-91	RES,CHIP	100K	5%	1/10W
R139	1-216-073-00	RES,CHIP	10K	5%	1/10W
R140	1-216-129-00	RES,CHIP	2.2M	5%	1/10W
R141	1-216-025-91	RES,CHIP	100	5%	1/10W
R144	1-216-295-91	SHORT	0		
R167	1-216-121-91	RES,CHIP	1M	5%	1/10W
R201	1-215-395-00	METAL	82	1%	1/4W
R202	1-216-025-91	RES,CHIP	100	5%	1/10W
R203	1-215-395-00	METAL	82	1%	1/4W
R204	1-216-025-91	RES,CHIP	100	5%	1/10W
R205	1-216-017-91	RES,CHIP	47	5%	1/10W
R206	1-216-017-91	RES,CHIP	47	5%	1/10W
R208	1-216-099-00	RES,CHIP	120K	5%	1/10W
R209	1-216-107-00	RES,CHIP	270K	5%	1/10W
R210	1-216-295-91	SHORT	0		
R211	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R212	1-216-621-11	METAL CHIP	56	0.50%	1/10W
R213	1-216-009-00	RES,CHIP	22	5%	1/10W
R214	1-216-035-00	RES,CHIP	270	5%	1/10W
R215	1-216-035-00	RES,CHIP	270	5%	1/10W
R216	1-216-017-91	RES,CHIP	47	5%	1/10W
R217	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R218	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R219	1-216-009-00	RES,CHIP	22	5%	1/10W
R220	1-216-097-91	RES,CHIP	100K	5%	1/10W
R221	1-216-097-91	RES,CHIP	100K	5%	1/10W
R222	1-216-027-00	RES,CHIP	120	5%	1/10W
R223	1-216-027-00	RES,CHIP	120	5%	1/10W
R224	1-219-497-11	CARBON	22	5%	1/2W
R225	1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R226	1-216-097-91	RES,CHIP	100K	5%	1/10W
R227	1-216-035-00	RES,CHIP	270	5%	1/10W
R228	1-216-121-91	RES,CHIP	1M	5%	1/10W
R229	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R230	1-216-097-91	RES,CHIP	100K	5%	1/10W
R231	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R232	1-216-035-00	RES,CHIP	270	5%	1/10W
R233	1-216-049-91	RES,CHIP	1K	5%	1/10W
R234	1-216-097-91	RES,CHIP	100K	5%	1/10W
R235	1-216-037-00	RES,CHIP	330	5%	1/10W
R236	1-216-097-91	RES,CHIP	100K	5%	1/10W
R237	1-216-097-91	RES,CHIP	100K	5%	1/10W
R239	1-216-073-00	RES,CHIP	10K	5%	1/10W
R240	1-216-129-00	RES,CHIP	2.2M	5%	1/10W

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REF.NO.	PART NO.	DESCRIPTION			REMARK
R241	1-216-025-91	RES,CHIP	100	5%	1/10W
R243	1-216-043-91	RES,CHIP	560	5%	1/10W
R244	1-216-295-91	SHORT	0		
R267	1-216-121-91	RES,CHIP	1M	5%	1/10W
R301	1-215-395-00	METAL	82	1%	1/4W
R302	1-216-025-91	RES,CHIP	100	5%	1/10W
R303	1-215-395-00	METAL	82	1%	1/4W
R304	1-216-025-91	RES,CHIP	100	5%	1/10W
R305	1-216-017-91	RES,CHIP	47	5%	1/10W
R306	1-216-017-91	RES,CHIP	47	5%	1/10W
R308	1-216-099-00	RES,CHIP	120K	5%	1/10W
R309	1-216-107-00	RES,CHIP	270K	5%	1/10W
R310	1-216-295-91	SHORT	0		
R311	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R312	1-216-623-11	METAL CHIP	68	0.50%	1/10W
R313	1-216-009-00	RES,CHIP	22	5%	1/10W
R314	1-216-035-00	RES,CHIP	270	5%	1/10W
R315	1-216-035-00	RES,CHIP	270	5%	1/10W
R316	1-216-017-91	RES,CHIP	47	5%	1/10W
R317	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R318	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R319	1-216-009-00	RES,CHIP	22	5%	1/10W
R320	1-216-097-91	RES,CHIP	100K	5%	1/10W
R321	1-216-097-91	RES,CHIP	100K	5%	1/10W
R322	1-216-027-00	RES,CHIP	120	5%	1/10W
R323	1-216-027-00	RES,CHIP	120	5%	1/10W
R324	1-219-497-11	CARBON	22	5%	1/2W
R325	1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R326	1-216-097-91	RES,CHIP	100K	5%	1/10W
R327	1-216-035-00	RES,CHIP	270	5%	1/10W
R328	1-216-121-91	RES,CHIP	1M	5%	1/10W
R329	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R330	1-216-097-91	RES,CHIP	100K	5%	1/10W
R331	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R332	1-216-035-00	RES,CHIP	270	5%	1/10W
R333	1-216-049-91	RES,CHIP	1K	5%	1/10W
R334	1-216-097-91	RES,CHIP	100K	5%	1/10W
R335	1-216-037-00	RES,CHIP	330	5%	1/10W
R336	1-216-097-91	RES,CHIP	100K	5%	1/10W
R337	1-216-097-91	RES,CHIP	100K	5%	1/10W
R339	1-216-073-00	RES,CHIP	10K	5%	1/10W
R340	1-216-129-00	RES,CHIP	2.2M	5%	1/10W
R341	1-216-025-91	RES,CHIP	100	5%	1/10W
R344	1-216-295-91	SHORT	0		
R367	1-216-121-91	RES,CHIP	1M	5%	1/10W
R406	1-216-049-91	RES,CHIP	1K	5%	1/10W
R407	1-216-089-91	RES,CHIP	47K	5%	1/10W
R408	1-216-097-91	RES,CHIP	100K	5%	1/10W
R409	1-216-049-91	RES,CHIP	1K	5%	1/10W
R410	1-216-049-91	RES,CHIP	1K	5%	1/10W
R411	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R412	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R413	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R415	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R416	1-216-049-91	RES,CHIP	1K	5%	1/10W
R417	1-216-089-91	RES,CHIP	47K	5%	1/10W
R418	1-260-127-11	CARBON	220K	5%	1/2W
R419	1-216-687-11	METAL CHIP	33K	0.50%	1/10W
R420	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R421	1-216-103-00	RES,CHIP	180K	5%	1/10W
R422	1-216-025-91	RES,CHIP	100	5%	1/10W
R423	1-216-089-91	RES,CHIP	47K	5%	1/10W
R424	1-216-025-91	RES,CHIP	100	5%	1/10W
R425	1-216-017-91	RES,CHIP	47	5%	1/10W
R426	1-216-025-91	RES,CHIP	100	5%	1/10W
R427	1-216-025-91	RES,CHIP	100	5%	1/10W
R428	1-216-049-91	RES,CHIP	1K	5%	1/10W
R429	1-216-025-91	RES,CHIP	100	5%	1/10W
R430	1-216-025-91	RES,CHIP	100	5%	1/10W
R431	1-216-025-91	RES,CHIP	100	5%	1/10W
R432	1-216-025-91	RES,CHIP	100	5%	1/10W
R433	1-216-025-91	RES,CHIP	100	5%	1/10W
R434	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R435	1-216-121-91	RES,CHIP	1M	5%	1/10W
R436	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R437	1-412-963-11	INDUCTOR	100UH		
R438	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R439	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R440	1-216-089-91	RES,CHIP	47K	5%	1/10W
R441	1-216-025-91	RES,CHIP	100	5%	1/10W
R442	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R443	1-216-041-00	RES,CHIP	470	5%	1/10W
R444	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R446	1-216-025-91	RES,CHIP	100	5%	1/10W
R451	1-216-025-91	RES,CHIP	100	5%	1/10W
R452	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R453	1-216-073-00	RES,CHIP	10K	5%	1/10W
R454	1-216-073-00	RES,CHIP	10K	5%	1/10W
R456	1-216-089-91	RES,CHIP	47K	5%	1/10W
R457	1-219-720-11	METAL	10M	5%	1W
R458	1-211-885-21	METAL	2.2M	5%	1W
R459	1-219-720-11	METAL	10M	5%	1W
R461	1-249-441-11	CARBON	100K	5%	1/4W
R462	1-216-089-91	RES,CHIP	47K	5%	1/10W
R463	1-216-099-00	RES,CHIP	120K	5%	1/10W
R464	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R466	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R470	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R471	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R473	1-216-073-00	RES,CHIP	10K	5%	1/10W
R475	1-216-073-00	RES,CHIP	10K	5%	1/10W
R477	1-216-081-00	RES,CHIP	22K	5%	1/10W
R478	1-249-381-11	CARBON	1	5%	1/4W F
R479	1-249-381-11	CARBON	1	5%	1/4W F
R480	1-249-381-11	CARBON	1	5%	1/4W F
		<SPARK GAP>			
SG101	1-517-499-21	GAP, SPARK			
SG201	1-517-499-21	GAP, SPARK			

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF.NO.	PART NO.	DESCRIPTION			REMARK
SG301	1-517-499-21	GAP, SPARK			
SG401	1-519-526-11	LAMP, NEON			
SG402	1-519-422-11	GAP, SPARK			
		<SOCKET>			
SK401⚠	1-251-640-11	SOCKET, PICTURE TUBE			
		**********			
	* 8-933-269-00	GA BOARD, COMPLETE			
		**********			
		<CAPACITOR>			
C7501	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C7502	1-136-169-00	FILM	0.22MF	5%	50V
C7503	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C7504	1-136-165-00	FILM	0.1MF	5%	50V
C7505	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C7506	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
		<CONNECTOR>			
CN7501*	1-774-512-11	CONNECTOR, BPARD TO BOARD 10P			
		<DIODE>			
D7501	8-719-110-57	ZENER DIODE RD22ESB2			
D7502	8-719-911-19	DIODE 1SS119-25			
		<IC>			
IC7501	8-759-482-62	IC MC33262P			
		<TRANSISTOR>			
Q7501	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R			
Q7502	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q7503	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q7504	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R			
		<RESISTOR>			
R7501	1-216-025-91	RES,CHIP	100	5%	1/10W
R7502	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7503	1-216-041-00	RES,CHIP	470	5%	1/10W
R7504	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R7505	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W
R7506	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7507	1-216-089-91	RES,CHIP	47K	5%	1/10W
R7508	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7509	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7510	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7511	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7512	1-216-089-91	RES,CHIP	47K	5%	1/10W
R7513	1-216-093-00	RES,CHIP	68K	5%	1/10W
		**********			
	* 8-933-277-00	G BOARD, COMPLETE			
		**********			
	4-382-854-11	SCREW (M3X10), P, SW (+) (Q610, Q640, D610, D611, D672)			
	* 7-322-065-72	RUBBER, RTV (SE-9168) (130G) (C671, C682, VDR640)			
	7-682-947-01	SCREW +PSW 3X6 (IC660)			
		<CAPACITOR>			
C601⚠	1-113-900-51	CERAMIC	470PF	10%	250V
C602⚠	1-113-900-51	CERAMIC	470PF	10%	250V
C603⚠	1-107-533-51	FILM	1MF	20%	250V
C604⚠	1-107-533-51	FILM	1MF	20%	250V
C605⚠	1-113-926-91	CERAMIC	0.0047MF		250V
C606⚠	1-113-926-91	CERAMIC	0.0047MF		250V
C607	1-113-900-11	CERAMIC	470PF	10%	250V
C610	1-137-479-11	FILM	1MF	10%	400V
C611	1-117-849-11	ELECT	330MF	20%	450V
C612	1-126-959-11	ELECT	0.47MF	20%	50V
C616	1-107-888-11	ELECT	47MF	20%	25V
C640	1-104-330-91	CERAMIC	470PF	10%	1kV
C641	1-104-330-91	CERAMIC	470PF	10%	1kV
C642	1-136-171-00	FILM	0.33MF	5%	50V
C643	1-136-171-00	FILM	0.33MF	5%	50V
C644	1-104-330-91	CERAMIC	470PF	10%	1kV
C645	1-136-167-00	FILM	0.15MF	5%	50V
C646	1-136-167-00	FILM	0.15MF	5%	50V
C647	1-129-719-00	FILM	0.027MF	5%	630V
C660	1-111-057-11	ELECT	120MF	20%	25V
C661	1-128-526-11	ELECT	100MF	20%	16V
C662	1-130-495-00	FILM	0.1MF	5%	50V
C663	1-126-965-11	ELECT	22MF	20%	50V
C670	1-137-370-11	FILM	0.01MF	5%	50V
C671	1-107-966-51	ELECT	220MF	20%	250V
C672	1-107-959-11	ELECT	3.3MF	20%	250V
C673	1-107-935-11	ELECT	330MF	20%	100V
C674	1-107-928-11	ELECT	4.7MF	20%	100V
C675	1-107-890-11	ELECT	2200MF	20%	25V
C676	1-107-888-11	ELECT	47MF	20%	25V
C677	1-107-890-11	ELECT	2200MF	20%	25V
C678	1-107-888-11	ELECT	47MF	20%	25V
C679	1-126-927-11	ELECT	2200MF	20%	10V
C680	1-126-927-11	ELECT	2200MF	20%	10V
C681	1-107-905-11	ELECT	4.7MF	20%	50V
C682	1-126-963-11	ELECT	4.7MF	20%	50V
C683	1-164-646-11	CERAMIC	2200PF	10%	500V
C684	1-137-370-11	FILM	0.01MF	5%	50V
C685	1-107-909-11	ELECT	47MF	20%	50V
C690	1-107-888-11	ELECT	47MF	20%	25V
C691	1-107-888-11	ELECT	47MF	20%	25V

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The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION			REMARK
C692	1-111-016-11	ELECT	0.0012F	20%	10V
C693	1-130-495-00	FILM	0.1MF	5%	50V
C695	1-164-644-11	CERAMIC	330PF	10%	500V
C697	1-136-165-00	FILM	0.1MF	5%	50V
		<CONNECTOR>			
CN603*	1-580-689-11	PIN, CONNECTOR (PC BOARD) 4P			
CN604	1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P			
CN605	1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P			
CN610*	1-774-511-11	CONNECTOR, BOARD TO BOARD 10P			
CN671*	1-564-514-11	PLUG, CONNECTOR 11P			
CN672*	1-564-512-11	PLUG, CONNECTOR 9P			
CN673*	1-564-508-11	PLUG, CONNECTOR 5P			
		<DIODE>			
D610 ⚠	8-719-510-53	DIODE D4SB60L			
D611	8-719-029-04	DIODE D5L60			
D612	8-719-304-63	DIODE RM11C			
D613	8-719-110-49	ZENER DIODE RD18ESB2			
D614	8-719-977-28	ZENER DIODE DTZ10B			
D617	8-719-404-49	DIODE MA111			
D640	8-719-404-49	DIODE MA111			
D660	8-719-059-23	DIODE P6KE200AG23			
D661	8-719-979-64	DIODE UF4005PKG23			
D662	8-719-058-91	DIODE AG01A-V0			
D663	8-719-110-31	ZENER DIODE RD12ESB2			
D666	8-719-105-99	ZENER DIODE RD6.2M-B1			
D670	8-719-064-49	DIODE D4SBL40			
D671	8-719-510-64	DIODE S2LA20F			
D672	8-719-052-91	DIODE D4SBS4-F			
D673	8-719-022-97	DIODE D2S4MF			
D674	8-719-022-97	DIODE D2S4MF			
D677	8-719-911-19	DIODE 1SS119-25			
D678	8-719-911-19	DIODE 1SS119-25			
D680	8-719-404-49	DIODE MA111			
D681	8-719-404-49	DIODE MA111			
D682	8-719-510-64	DIODE S2LA20F			
D683	8-719-911-19	DIODE 1SS119-25			
D684	8-719-110-57	ZENER DIODE RD22ESB2			
D691	8-719-510-37	DIODE D5LC20U			
D692	8-719-911-19	DIODE 1SS119-25			
D693	8-719-404-49	DIODE MA111			
		<FUSE>			
F601 ⚠	1-576-233-11	FUSE (H.B.C.) (6.3A/250V)			
	1-533-223-11	HOLDER, FUSE ; F601			
		<FERRITE BEAD>			
FB610	1-410-396-41	FERRITE	0.45UH		
FB611	1-410-396-41	FERRITE	0.45UH		
FB612	1-410-396-41	FERRITE	0.45UH		

REF.NO.	PART NO.	DESCRIPTION			REMARK
		<IC>			
IC630	8-749-013-03	IC DM-60			
IC660	8-759-470-64	IC TOP223Y-BB			
IC690	8-749-011-42	IC SI-3050F			
IC691	8-759-140-85	IC UPC1093J			
		<COIL>			
L610	1-416-409-11	COIL, CHOKE			
L611	1-411-674-11	COIL, CHOKE	68UH		
L670	1-412-529-11	INDUCTOR	22UH		
L671	1-412-529-11	INDUCTOR	22UH		
L672	1-412-529-11	INDUCTOR	22UH		
L673	1-412-529-11	INDUCTOR	22UH		
L691	1-412-529-11	INDUCTOR	22UH		
		<PHOTO COUPLER>			
PH660	8-749-010-64	PHOTO COUPLER PC123F2			
PH680	8-749-010-64	PHOTO COUPLER PC123F2			
		<IC LINK>			
PS670⚠	1-533-593-31	LINK, IC (2A/90V AC, 60V DC)			
PS671⚠	1-533-593-31	LINK, IC (2A/90V AC, 60V DC)			
PS673⚠	1-533-593-31	LINK, IC (2A/90V AC, 60V DC)			
PS674⚠	1-533-593-31	LINK, IC (2A/90V AC, 60V DC)			
		<TRANSISTOR>			
Q610	8-729-041-65	TRANSISTOR 2SK2195F04			
Q615	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R			
Q640	8-729-041-12	TRANSISTOR MX0841AB-F			
Q641	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q642	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q660	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q680	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q681	8-729-230-45	TRANSISTOR 2SC2458-YGR			
Q682	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q683	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q690	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q691	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R			
		<RESISTOR>			
R601 ⚠	1-220-825-91	CARBON	330K	5%	1/2W
R604	1-260-089-11	CARBON	150	5%	1/2W
R610	1-216-383-11	METAL OXIDE	0.33	5%	3W F
R611	1-216-383-11	METAL OXIDE	0.33	5%	3W F
R612	1-215-477-00	METAL	220K	1%	1/4W
R613	1-215-477-00	METAL	220K	1%	1/4W
R614	1-215-473-00	METAL	150K	1%	1/4W
R615	1-215-473-00	METAL	150K	1%	1/4W
R616	1-215-473-00	METAL	150K	1%	1/4W
R617	1-215-481-00	METAL	330K	1%	1/4W
R618	1-215-477-00	METAL	220K	1%	1/4W
R619	1-215-485-00	METAL	470K	1%	1/4W

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REF.NO.	PART NO.	DESCRIPTION			REMARK
R620	1-215-485-00	METAL	470K	1%	1/4W
R621	1-215-481-00	METAL	330K	1%	1/4W
R622	1-216-049-91	RES,CHIP	1K	5%	1/10W
R623	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R624	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W
R625	1-249-389-11	CARBON	4.7	5%	1/4W
R626	1-249-429-11	CARBON	10K	5%	1/4W
R627	1-215-479-00	METAL	270K	1%	1/4W
R628	1-215-481-00	METAL	330K	1%	1/4W
R629	1-215-461-00	METAL	47K	1%	1/4W
R631	1-247-807-31	CARBON	100	5%	1/4W
R632	1-216-073-00	RES,CHIP	10K	5%	1/10W
R633	1-215-481-00	METAL	330K	1%	1/4W
R635	1-216-073-00	RES,CHIP	10K	5%	1/10W
R640	1-202-933-61	FUSIBLE	0.1	10%	1/2W F
R641	1-218-642-11	METAL OXIDE	100K	5%	1W F
R642	1-218-642-11	METAL OXIDE	100K	5%	1W F
R643	1-247-863-91	CARBON	22K	5%	1/4W
R644	1-216-105-91	RES,CHIP	220K	5%	1/10W
R645	1-216-081-00	RES,CHIP	22K	5%	1/10W
R646	1-216-073-00	RES,CHIP	10K	5%	1/10W
R647	1-249-441-11	CARBON	100K	5%	1/4W
R648	1-216-353-00	METAL OXIDE	2.2	5%	1W F
R649	1-218-642-11	METAL OXIDE	100K	5%	1W F
R650	1-218-642-11	METAL OXIDE	100K	5%	1W F
R651	1-216-353-00	METAL OXIDE	2.2	5%	1W F
R652	1-212-942-00	FUSIBLE	2.2	5%	1/2W F
R655	1-216-073-00	RES,CHIP	10K	5%	1/10W
R661	1-249-387-11	CARBON	3.3	5%	1/4W F
R662	1-216-073-00	RES,CHIP	10K	5%	1/10W
R663	1-216-073-00	RES,CHIP	10K	5%	1/10W
R664	1-247-791-91	CARBON	22	5%	1/4W
R665	1-216-033-00	RES,CHIP	220	5%	1/10W
R666	1-215-441-00	METAL	6.8K	1%	1/4W
R667	1-215-433-00	METAL	3.3K	1%	1/4W
R668	1-249-401-11	CARBON	47	5%	1/4W
R669	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R671	1-216-113-00	RES,CHIP	470K	5%	1/10W
R672	1-216-049-91	RES,CHIP	1K	5%	1/10W
R673	1-249-413-11	CARBON	470	5%	1/4W F
R674	1-249-377-11	CARBON	0.47	5%	1/4W F
R675	1-260-292-11	CARBON	1	5%	1/2W
R676	1-249-413-11	CARBON	470	5%	1/4W
R680	1-216-073-00	RES,CHIP	10K	5%	1/10W
R681	1-216-049-91	RES,CHIP	1K	5%	1/10W
R682	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R683	1-216-025-91	RES,CHIP	100	5%	1/10W
R685	1-216-073-00	RES,CHIP	10K	5%	1/10W
R686	1-216-049-91	RES,CHIP	1K	5%	1/10W
R687	1-216-049-91	RES,CHIP	1K	5%	1/10W
R688	1-216-073-00	RES,CHIP	10K	5%	1/10W
R689	1-216-073-00	RES,CHIP	10K	5%	1/10W
R691	1-216-073-00	RES,CHIP	10K	5%	1/10W
R692	1-260-085-11	CARBON	68	5%	1/2W
R693	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R694	1-216-073-00	RES,CHIP	10K	5%	1/10W
R695	1-249-443-11	CARBON	0.47	5%	1/4W F
R696	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R697	1-216-649-11	METAL CHIP	820	0.50%	1/10W
R698	1-216-073-00	RES,CHIP	10K	5%	1/10W
R699	1-216-081-00	RES,CHIP	22K	5%	1/10W

<RELAY>

RY601⚠	1-515-669-21	RELAY
RY602⚠	1-755-031-11	RELAY

<TRANSFORMER>

T601⚠	1-429-180-11	TRANSFORMER, LINE FILTER
T640	1-431-538-11	TRANSFORMER, CONVERTER (PIT)
T641	1-429-992-11	TRANSFORMER, CONVERTER (PRT)
T660	1-431-565-11	TRANSFORMER, CONVERTER (SRT)

<THERMISTOR>

TH601 ⚠	1-809-260-11	THERMISTOR, POWER
THP601⚠	1-809-827-11	THERMISTOR, POSITIVE

<VARISTOR>

VDR601 ⚠	1-801-268-51	VARISTOR TNR14V471K660
VDR602 ⚠	1-810-622-21	VARISTOR
VDR640	1-810-974-21	VARISTOR TNR10V431K660

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* 8-933-311-00 D BOARD, COMPLETE
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4-040-989-01 SPRING (A), TR RETAINER (IC702, R511)
4-040-992-01 SPRING (AA), TR RETAINER (IC502, Q507)
4-040-994-01 SPRING (BB), TR RETAINER (Q508, D519)
4-047-285-01 SHEET, INSULATING (Q909)
4-060-720-01 SHEET, INSULATE (Q508)

4-060-844-01 SHEET, INSULATING (IC702)
4-382-854-01 SCREW (M3X8), P, SW (+) (R937)
4-382-854-11 SCREW (M3X10), P, SW (+) (IC702, Q704, Q706, Q908, Q909)
7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3 (IC502, Q507, Q508, D519, R511)

<CAPACITOR>

C001	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C002	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C003	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C004	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C005	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C006	1-126-960-11	ELECT	1MF	20%	50V
C007	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C008	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V

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REF.NO.	PART NO.	DESCRIPTION			REMARK
C009	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C010	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C011	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C012	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C013	1-126-967-11	ELECT	47MF	20%	50V
C014	1-107-914-11	ELECT	1000MF	20%	25V
C015	1-107-914-11	ELECT	1000MF	20%	25V
C016	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C017	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C018	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C019	1-126-967-11	ELECT	47MF	20%	50V
C020	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C021	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V
C022	1-126-933-11	ELECT	100MF	20%	16V
C023	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C024	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C025	1-126-960-11	ELECT	1MF	20%	50V
C026	1-137-372-11	FILM	0.022MF	5%	50V
C027	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C028	1-164-695-11	CERAMIC CHIP	0.0022MF	5%	50V
C029	1-126-960-11	ELECT	1MF	20%	50V
C030	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C031	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C032	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C034	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C035	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C036	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C037	1-126-934-11	ELECT	220MF	20%	16V
C038	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C039	1-126-964-11	ELECT	10MF	20%	50V
C040	1-126-963-11	ELECT	4.7MF	20%	50V
C041	1-126-960-11	ELECT	1MF	20%	50V
C042	1-126-967-11	ELECT	47MF	20%	50V
C043	1-126-967-11	ELECT	47MF	20%	50V
C044	1-126-967-11	ELECT	47MF	20%	50V
C045	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C046	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C047	1-126-934-11	ELECT	220MF	20%	16V
C048	1-164-695-11	CERAMIC CHIP	0.0022MF	5%	50V
C049	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C050	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C051	1-126-960-11	ELECT	1MF	20%	50V
C052	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C054	1-126-963-11	ELECT	4.7MF	20%	50V
C055	1-126-963-11	ELECT	4.7MF	20%	50V
C056	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C057	1-107-909-11	ELECT	47MF	20%	50V
C058	1-126-934-11	ELECT	220MF	20%	16V
C059	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C060	1-126-964-11	ELECT	10MF	20%	50V
C061	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C063	1-130-495-00	FILM	0.1MF	5%	50V
C065	1-126-965-11	ELECT	22MF	20%	50V
C066	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C067	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C068	1-126-964-11	ELECT	10MF	20%	50V
C069	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C070	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C072	1-126-960-11	ELECT	1MF	20%	50V
C074	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C075	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C076	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C077	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C078	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C079	1-126-967-11	ELECT	47MF	20%	50V
C080	1-126-967-11	ELECT	47MF	20%	50V
C081	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C082	1-126-964-11	ELECT	10MF	20%	50V
C083	1-130-495-00	FILM	0.1MF	5%	50V
C084	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C085	1-130-495-00	FILM	0.1MF	5%	50V
C086	1-126-964-11	ELECT	10MF	20%	50V
C087	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C090	1-109-982-11	CERAMIC CHIP	1MF	10%	10V
C092	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C093	1-126-964-11	ELECT	10MF	20%	50V
C094	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C095	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C096	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C097	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C098	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C099	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C501	1-107-909-11	ELECT	47MF	20%	50V
C502	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C503	1-136-169-00	FILM	0.22MF	5%	50V
C504	1-137-605-11	FILM	0.01MF	10%	250V
C505	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C506	1-136-169-00	FILM	0.22MF	5%	50V
C507	1-136-173-00	FILM	0.47MF	5%	50V
C508	1-163-037-11	CERAMIC CHIP	0.022MF	10%	50V
C509	1-126-941-11	ELECT	470MF	20%	25V
C510	1-137-368-11	FILM	0.0047MF	5%	50V
C511	1-117-398-11	ELECT	33MF	20%	250V
C512	1-107-889-11	ELECT	220MF	20%	25V
C513	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C514	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C515	1-107-889-11	ELECT	220MF	20%	25V
C516	1-130-495-00	FILM	0.1MF	5%	50V
C517	1-104-574-11	CERAMIC	0.0047MF	10%	2KV
C518	1-117-959-11	FILM	4700PF	3%	1.8KV
C519	1-107-444-11	CERAMIC	100PF	5%	2KV
C520	1-136-553-11	FILM	0.0015MF	5%	630V
C521	1-107-597-11	CERAMIC	22PF	5%	500V
C522	1-107-444-11	CERAMIC	100PF	5%	2KV
C523	1-137-370-11	FILM	0.01MF	5%	50V
C524	1-113-694-11	FILM	0.056MF	5%	250V
C525	1-107-846-11	FILM	0.1MF	5%	250V
C526	1-115-514-11	FILM	0.22MF	5%	250V
C527	1-115-517-11	FILM	0.39MF	5%	250V
C528	1-115-521-11	FILM	0.82MF	5%	250V
C529	1-107-683-11	ELECT	2.2MF	0	250V
C530	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V

REF.NO.	PART NO.	DESCRIPTION				REMARK
C531	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C532	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C533	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C534	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C535	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C536	1-128-526-11	ELECT	100MF	20%	25V	
C537	1-115-523-71	FILM	1.2MF	5%	250V	
C538	1-117-958-11	FILM	0.24MF	5%	400V	
C539	1-107-960-11	ELECT	4.7MF	20%	250V	
C540	1-106-343-00	MYLAR	0.001MF	10%	200V	
C541	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C542	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C544	1-137-368-11	FILM	0.0047MF	5%	50V	
C545	1-126-967-11	ELECT	47MF	20%	50V	
C547	1-126-967-11	ELECT	47MF	20%	50V	
C549	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C550	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C551	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C553	1-126-963-11	ELECT	4.7MF	20%	50V	
C554	1-163-037-11	CERAMIC CHIP	0.022MF	10%	50V	
C555	1-163-037-11	CERAMIC CHIP	0.022MF	10%	50V	
C556	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C557	1-115-185-11	CERAMIC CHIP	0.033MF	10%	50V	
C559	1-162-134-11	CERAMIC	470PF	10%	2KV	
C561	1-136-173-00	FILM	0.47MF	5%	50V	
C562	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C563	1-117-214-11	CERAMIC	0.001MF	10%	2KV	
C564	1-126-963-11	ELECT	4.7MF	20%	50V	
C666	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C667	1-126-967-11	ELECT	47MF	20%	50V	
C701	1-126-967-11	ELECT	47MF	20%	50V	
C702	1-130-495-00	FILM	0.1MF	5%	50V	
C705	1-126-942-61	ELECT	1000MF	20%	25V	
C706	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C707	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C709	1-130-495-00	FILM	0.1MF	5%	50V	
C710	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V	
C711	1-107-894-11	ELECT	220MF	20%	35V	
C712	1-106-228-00	MYLAR	0.22MF	10%	100V	
C713	1-126-942-61	ELECT	1000MF	20%	25V	
C714	1-126-967-11	ELECT	47MF	20%	50V	
C715	1-107-932-11	ELECT	47MF	20%	100V	
C717	1-107-930-91	ELECT	22MF	20%	100V	
C729	1-162-134-11	CERAMIC	470PF	10%	2KV	
C735	1-130-495-00	FILM	0.1MF	5%	50V	
C746	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C747	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C750	1-126-964-11	ELECT	10MF	20%	50V	
C751	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C901	1-107-889-11	ELECT	220MF	20%	25V	
C902	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C903	1-163-259-91	CERAMIC CHIP	220PF	5%	50V	
C904	1-137-605-11	FILM	0.01MF	10%	250V	
C905	1-104-653-11	ELECT	220MF	20%	16V	
C906	1-106-220-00	MYLAR	0.1MF	10%	100V	
C907	1-119-748-11	ELECT	33MF	20%	400V	
C908	1-136-169-00	FILM	0.22MF	5%	50V	
C909	1-106-355-12	MYLAR	0.0033MF	10%	200V	
C910	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C911	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V	
C912	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V	
C913	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C914	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V	
C915	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C916	1-136-064-00	FILM	2200PF	3%	1.2KV	
C917	1-107-889-11	ELECT	220MF	20%	25V	
C919	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C920	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C921	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C922	1-115-516-71	FILM	0.33MF	5%	250V	
C923	1-106-359-00	MYLAR	0.0047MF	10%	100V	
C924	1-106-220-00	MYLAR	0.1MF	10%	100V	
C925	1-137-372-11	FILM	0.022MF	5%	50V	
C926	1-106-228-00	MYLAR	0.22MF	10%	100V	
C927	1-107-903-11	ELECT	2.2MF	20%	50V	
C928	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C929	1-128-526-11	ELECT	100MF	20%	25V	
C930	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C931	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C945	1-107-909-11	ELECT	47MF	20%	50V	
C1003	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1004	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1005	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1006	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1007	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1008	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1009	1-126-960-11	ELECT	1MF	20%	50V	
C1501	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V	
C1502	1-117-722-11	ELECT	2200MF	20%	10V	
C1503	1-163-001-11	CERAMIC CHIP	220PF	10%	50V	
		<CONNECTOR>				
CN501*	1-564-512-11	PLUG, CONNECTOR 9P				
CN502*	1-564-514-11	PLUG, CONNECTOR 11P				
CN503*	1-564-510-11	PLUG, CONNECTOR 7P				
CN504*	1-564-508-11	PLUG, CONNECTOR 5P				
CN505*	1-508-879-11	BASE POST				
CN506*	1-564-511-11	PLUG, CONNECTOR 8P				
CN507	1-764-101-11	PIN, CONNECTOR (PC BOARD) 2P				
CN508*	1-778-955-11	PIN, CONNECTOR (PC BOARD) 10P				
CN509	1-564-505-11	PLUG, CONNECTOR 2P				
CN511*	1-564-514-11	PLUG, CONNECTOR 11P				
CN512*	1-564-512-11	PLUG, CONNECTOR 9P				
CN520*	1-564-509-11	PLUG, CONNECTOR 6P				
CN901*	1-564-520-11	PLUG, CONNECTOR 5P				
		<DIODE>				
D004	8-719-062-51	DIODE 1PS226-115				
D007	8-719-976-99	ZENER DIODE DTZ5.1B				
D008	8-719-976-99	ZENER DIODE DTZ5.1B				
D009	8-719-976-99	ZENER DIODE DTZ5.1B				

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REF.NO.	PART NO.	DESCRIPTION	REMARK
D010	8-719-976-99	ZENER DIODE DTZ5.1B	
D012	8-719-062-51	DIODE 1PS226-115	
D013	8-719-062-51	DIODE 1PS226-115	
D014	8-719-062-51	DIODE 1PS226-115	
D015	8-719-062-51	DIODE 1PS226-115	
D016	8-719-062-51	DIODE 1PS226-115	
D019	8-719-062-51	DIODE 1PS226-115	
D020	8-719-062-51	DIODE 1PS226-115	
D025	8-719-976-99	ZENER DIODE DTZ5.1B	
D026	8-719-062-51	DIODE 1PS226-115	
D027	8-719-062-51	DIODE 1PS226-115	
D028	8-719-800-76	DIODE 1SS226	
D029	8-719-800-76	DIODE 1SS226	
D032	8-719-976-99	ZENER DIODE DTZ5.1B	
D033	8-719-976-99	ZENER DIODE DTZ5.1B	
D034	8-719-801-78	DIODE 1SS184	
D035	8-719-801-78	DIODE 1SS184	
D050	8-719-404-49	DIODE MA111	
D501	8-719-977-40	ZENER DIODE DTZ13B	
D502	8-719-063-89	DIODE YG911S3R	
D503	8-719-404-49	DIODE MA111	
D504	8-719-984-73	DIODE SB560	
D505	8-719-018-82	DIODE RGP02-20EL-6394	
D506	8-719-911-19	DIODE 1SS119-25	
D507	8-719-911-19	DIODE 1SS119-25	
D508	8-719-109-85	ZENER DIODE RD5.1ESB2	
D509	8-719-911-19	DIODE 1SS119-25	
D510	8-719-951-30	DIODE ERA91-02	
D511	8-719-911-19	DIODE 1SS119-25	
D512	8-719-018-82	DIODE RGP02-20EL-6394	
D513	8-719-404-49	DIODE MA111	
D514	8-719-109-93	ZENER DIODE RD6.2ESB2	
D516	8-719-105-99	ZENER DIODE RD6.2M-B1	
D517	8-719-105-99	ZENER DIODE RD6.2M-B1	
D518	8-719-404-49	DIODE MA111	
D519	8-719-066-36	DIODE FMQ-G5GS	
D520	8-719-031-34	DIODE RGP02-20EG23	
D521	8-719-404-49	DIODE MA111	
D660	8-719-977-69	ZENER DIODE DTZ24B	
D701	8-719-158-15	ZENER DIODE RD5.6SB	
D704	8-719-404-49	DIODE MA111	
D705	8-719-404-49	DIODE MA111	
D706	8-719-976-99	ZENER DIODE DTZ5.1B	
D709	8-719-979-85	DIODE EGP20G	
D713	8-719-911-19	DIODE 1SS119-25	
D714	8-719-911-19	DIODE 1SS119-25	
D715	8-719-911-19	DIODE 1SS119-25	
D718	8-719-976-99	ZENER DIODE DTZ5.1B	
D720	8-719-028-72	DIODE RGP02-17EL-6433	
D721	8-719-028-72	DIODE RGP02-17EL-6433	
D901	8-719-404-49	DIODE MA111	
D902	8-719-404-49	DIODE MA111	
D903	8-719-911-19	DIODE 1SS119-25	
D904	8-719-404-49	DIODE MA111	
D905	8-719-404-49	DIODE MA111	
D906	8-719-404-49	DIODE MA111	
D907	8-719-158-49	ZENER DIODE RD12SB2	
D908	8-719-158-49	ZENER DIODE RD12SB2	
D909	8-719-977-40	ZENER DIODE DTZ13B	
D910	8-719-063-89	DIODE YG911S3R	
D911	8-719-978-69	ZENER DIODE DTZ-TT11-16B	
D913	8-719-158-49	ZENER DIODE RD12SB2	
D915	8-719-109-85	ZENER DIODE RD5.1ESB2	
D916	8-719-939-79	DIODE GMA01-BT	
D917	8-719-110-46	ZENER DIODE RD16ESB3	
D919	8-719-911-19	DIODE 1SS119-25	
D921	8-719-404-49	DIODE MA111	
D922	8-719-404-49	DIODE MA111	
D923	8-719-404-49	DIODE MA111	
D924	8-719-976-99	ZENER DIODE DTZ5.1B	
D935	8-719-977-81	ZENER DIODE DTZ33B	
D1501	8-719-976-99	ZENER DIODE DTZ5.1B	
D1502	8-719-404-49	DIODE MA111	
D1503	8-719-404-49	DIODE MA111	
		<FERRITE BEAD>	
FB501	1-410-397-21	INDUCTOR, FERRITE BEAD	1.1UH
FB502	1-410-397-21	INDUCTOR, FERRITE BEAD	1.1UH
FB901	1-410-397-21	INDUCTOR, FERRITE BEAD	1.1UH
FB1025	1-414-232-11	INDUCTOR, FERRITE BEAD	0UH
FB1026	1-414-232-11	INDUCTOR, FERRITE BEAD	0UH
		<IC>	
IC001	8-759-531-24	IC MB90553PF-G-120-BND	
IC002	8-759-442-20	IC 24LC21AT/SN	
IC003	8-759-168-20	IC TA78L09S	
IC004	8-759-454-79	IC 24LC16BT/SN	
IC005	8-759-162-80	IC MM1170BFB	
IC006	8-759-231-53	IC TA7805S	
IC007	8-752-078-46	IC CXA2043Q	
IC008	8-759-701-59	IC NJM78M09FA	
IC009	8-759-082-57	IC TC7W04FU	
IC010	8-752-083-83	IC CXA2044M-T6	
IC011	8-759-708-05	IC NJM78L05A	
IC012	8-759-442-20	IC24LC21AT/SN	
IC013	8-759-233-66	IC TC74HCT04AF	
IC502	8-759-803-42	IC LA6500-FA	
IC505	8-759-100-96	IC UPC4558G2	
IC701	8-759-822-38	IC LA6510	
IC702	8-759-444-82	IC LA7841L	
IC703	8-759-100-96	IC UPC4558G2	
IC901	8-759-467-70	IC BA9756FS-E2	
		<CHIP CONDUCTOR>	
JR001	1-216-295-91	SHORT	0
JR002	1-216-295-91	SHORT	0
JR003	1-216-295-91	SHORT	0
JR004	1-216-295-91	SHORT	0

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The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<COIL>	
L001	1-406-665-11	COIL, CHOKE 100UH	
L002	1-406-665-11	COIL, CHOKE 100UH	
L003	1-412-537-31	INDUCTOR 100UH	
L004	1-412-537-31	INDUCTOR 100UH	
L006	1-410-482-31	INDUCTOR 100UH	
L007	1-412-537-31	INDUCTOR 100UH	
L008	1-412-537-31	INDUCTOR 100UH	
L501	1-412-537-31	INDUCTOR 100UH	
L502	1-406-671-11	COIL, CHOKE 1.0MMH	
L503	1-416-455-11	COIL, HORIZONTAL LINEARITY	
L504	1-416-456-11	COIL, HORIZONTAL LINEARITY	
L505	1-406-675-11	COIL, CHOKE 4.7MMH	
L507	1-406-675-11	COIL, CHOKE 4.7MMH	
L701	1-412-537-31	INDUCTOR 100UH	
L702	1-412-522-31	INDUCTOR 5.6UH	
L901	1-412-537-31	INDUCTOR 100UH	
L902	1-406-660-41	COIL, CHOKE 15UH	
L903	1-412-537-31	INDUCTOR 100UH	
		<IC LINK>	
PS501⚠	1-533-592-31	LINK, IC (1.6A/90V AC, 60V DC)	
PS502⚠	1-532-984-91	LINK, IC (2A/90V)	
PS503⚠	1-532-984-91	LINK, IC (2A/90V)	
PS504⚠	1-532-984-91	LINK, IC (2A/90V)	
PS701⚠	1-533-590-31	LINK, IC (1A/90V AC, 60V DC)	
PS901⚠	1-533-592-31	LINK, IC (1.6A/90V AC, 60V DC)	
		<TRANSISTOR>	
Q001	8-729-027-31	TRANSISTOR DTA124EKA-T146	
Q003	8-729-216-22	TRANSISTOR 2SA1162-G	
Q004	8-729-216-22	TRANSISTOR 2SA1162-G	
Q005	8-729-216-22	TRANSISTOR 2SA1162-G	
Q006	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q007	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q502	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q503	8-729-901-97	TRANSISTOR 2SA1036K-Q	
Q504	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q505	8-729-901-97	TRANSISTOR 2SA1036K-Q	
Q506	8-729-820-73	TRANSISTOR 2SC3746	
Q507	8-729-035-54	TRANSISTOR 2SJ449	
Q508	8-729-031-87	TRANSISTOR 2SC5047-CA	
Q509	8-729-033-25	TRANSISTOR DTC114GKA	
Q510	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q511	8-729-140-50	TRANSISTOR 2SC3209LK	
Q512	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q517	8-729-216-22	TRANSISTOR 2SA1162-G	
Q522	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q523	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q524	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q525	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q526	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q527	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q528	8-729-043-41	TRANSISTOR 2SK2098-01MR-F119	
Q660	8-729-033-26	TRANSISTOR DTA114GKAT146	
Q661	8-729-033-25	TRANSISTOR DTC114GKA	
Q701	8-729-800-32	TRANSISTOR 2SC2362K-G	
Q703	8-729-178-43	TRANSISTOR 2SC2784-E	
Q704	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q705	8-729-204-91	TRANSISTOR 2SA1049-GR	
Q706	8-729-207-89	TRANSISTOR 2SA1358-Y	
Q707	8-729-216-22	TRANSISTOR 2SA1162-G	
Q708	8-729-020-07	TRANSISTOR 2SC4686A(LBSONY)	
Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q902	8-729-216-22	TRANSISTOR 2SA1162-G	
Q904	8-729-901-87	TRANSISTOR 2SC2411K-CQ	
Q905	8-729-901-97	TRANSISTOR 2SA1036K-Q	
Q908	8-729-035-54	TRANSISTOR 2SJ449	
Q909	8-729-033-91	TRANSISTOR 2SK1120LBSONY2	
Q911	8-729-033-25	TRANSISTOR DTC114GKA	
		<RESISTOR>	
R001	1-216-025-91	RES,CHIP 100 5% 1/10W	
R002	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R003	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R004	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R005	1-216-073-00	RES,CHIP 10K 5% 1/10W	
R006	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R007	1-216-025-91	RES,CHIP 100 5% 1/10W	
R008	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R009	1-216-025-91	RES,CHIP 100 5% 1/10W	
R010	1-216-081-00	RES,CHIP 22K 5% 1/10W	
R011	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R012	1-216-025-91	RES,CHIP 100 5% 1/10W	
R013	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R017	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R018	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R020	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R023	1-216-025-91	RES,CHIP 100 5% 1/10W	
R024	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R025	1-216-295-91	SHORT 0	
R026	1-216-073-00	RES,CHIP 10K 5% 1/10W	
R027	1-216-073-00	RES,CHIP 10K 5% 1/10W	
R028	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R029	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R030	1-216-017-91	RES,CHIP 47 5% 1/10W	
R031	1-216-073-00	RES,CHIP 10K 5% 1/10W	
R032	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R033	1-216-017-91	RES,CHIP 47 5% 1/10W	
R034	1-216-025-91	RES,CHIP 100 5% 1/10W	
R035	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R036	1-216-025-91	RES,CHIP 100 5% 1/10W	
R037	1-216-686-11	METAL CHIP 30K 0.50% 1/10W	
R038	1-216-685-11	METAL CHIP 27K 0.50% 1/10W	
R039	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R040	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R041	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R042	1-216-089-91	RES,CHIP 47K 5% 1/10W	

D

REF.NO.	PART NO.	DESCRIPTION			REMARK
R043	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R044	1-216-095-00	RES,CHIP	82K	5%	1/10W
R045	1-216-073-00	RES,CHIP	10K	5%	1/10W
R046	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R047	1-216-073-00	RES,CHIP	10K	5%	1/10W
R048	1-216-049-91	RES,CHIP	1K	5%	1/10W
R049	1-216-049-91	RES,CHIP	1K	5%	1/10W
R050	1-216-025-91	RES,CHIP	100	5%	1/10W
R051	1-216-679-11	METAL CHIP	15K	0.50%	1/10W
R052	1-216-073-00	RES,CHIP	10K	5%	1/10W
R053	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R054	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R055	1-216-089-91	RES,CHIP	47K	5%	1/10W
R056	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W
R057	1-216-679-11	METAL CHIP	15K	0.50%	1/10W
R058	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R059	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R060	1-216-025-91	RES,CHIP	100	5%	1/10W
R061	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R063	1-216-025-91	RES,CHIP	100	5%	1/10W
R064	1-216-025-91	RES,CHIP	100	5%	1/10W
R065	1-216-025-91	RES,CHIP	100	5%	1/10W
R066	1-216-025-91	RES,CHIP	100	5%	1/10W
R067	1-216-025-91	RES,CHIP	100	5%	1/10W
R068	1-216-025-91	RES,CHIP	100	5%	1/10W
R069	1-216-017-91	RES,CHIP	47	5%	1/10W
R070	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R071	1-216-049-91	RES,CHIP	1K	5%	1/10W
R072	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R073	1-216-295-91	SHORT	0		
R074	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R075	1-216-049-91	RES,CHIP	1K	5%	1/10W
R076	1-216-049-91	RES,CHIP	1K	5%	1/10W
R077	1-216-049-91	RES,CHIP	1K	5%	1/10W
R078	1-216-049-91	RES,CHIP	1K	5%	1/10W
R079	1-216-017-91	RES,CHIP	47	5%	1/10W
R080	1-216-017-91	RES,CHIP	47	5%	1/10W
R081	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R082	1-216-049-91	RES,CHIP	1K	5%	1/10W
R083	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R084	1-216-025-91	RES,CHIP	100	5%	1/10W
R085	1-216-025-91	RES,CHIP	100	5%	1/10W
R086	1-216-049-91	RES,CHIP	1K	5%	1/10W
R088	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R089	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R090	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R092	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R094	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R096	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W
R097	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R101	1-216-049-91	RES,CHIP	1K	5%	1/10W
R501	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R502	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R503	1-216-041-00	RES,CHIP	470	5%	1/10W
R504	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R505	1-216-041-00	RES,CHIP	470	5%	1/10W
R506	1-249-397-11	CARBON	22	5%	1/4W F
R507	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R508	1-216-025-91	RES,CHIP	100	5%	1/10W
R509	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R510	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R511	1-219-726-11	METAL	2.2	5%	10W
R512	1-216-627-11	METAL CHIP	100	0.50%	1/10W
R513	1-215-860-11	METAL OXIDE	33	5%	1W F
R514	1-211-796-11	FUSIBLE	1	5%	1/2W F
R515	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R516	1-247-815-91	CARBON	220	5%	1/4W
R517	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R518	1-216-097-91	RES,CHIP	100K	5%	1/10W
R519	1-216-393-00	METAL OXIDE	2.2	5%	3W F
R520	1-216-393-00	METAL OXIDE	2.2	5%	3W F
R521	1-249-413-11	CARBON	470	5%	1/4W F
R522	1-216-423-11	METAL OXIDE	27	5%	1W F
R523	1-249-421-11	CARBON	2.2K	5%	1/4W F
R524	1-215-869-11	METAL OXIDE	1K	5%	1W F
R525	1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R526	1-214-840-00	METAL	100	1%	1/2W
R527	1-214-840-00	METAL	100	1%	1/2W
R528	1-214-840-00	METAL	100	1%	1/2W
R529	1-260-313-51	CARBON	56	5%	1/2W
R530	1-249-437-11	CARBON	47K	5%	1/4W
R531	1-249-437-11	CARBON	47K	5%	1/4W
R532	1-249-437-11	CARBON	47K	5%	1/4W
R533	1-249-437-11	CARBON	47K	5%	1/4W
R534	1-249-437-11	CARBON	47K	5%	1/4W
R535	1-216-049-91	RES,CHIP	1K	5%	1/10W
R536	1-216-049-91	RES,CHIP	1K	5%	1/10W
R537	1-216-049-91	RES,CHIP	1K	5%	1/10W
R538	1-216-049-91	RES,CHIP	1K	5%	1/10W
R539	1-216-049-91	RES,CHIP	1K	5%	1/10W
R540	1-216-073-00	RES,CHIP	10K	5%	1/10W
R541	1-260-314-11	CARBON	68	5%	1/2W
R542	1-215-863-11	METAL OXIDE	100	5%	1W F
R543	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R544	1-260-085-11	CARBON	68	5%	1/2W
R545	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R546	1-260-288-11	CARBON	0.47	5%	1/2W
R547	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R548	1-215-443-00	METAL	8.2K	1%	1/4W
R549	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R550	1-260-288-11	CARBON	0.47	5%	1/2W
R551	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R552	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R553	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R554	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R555	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R556	1-216-674-11	METAL CHIP	9.1K	0.50%	1/10W
R557	1-218-760-11	METAL CHIP	220K	0.50%	1/10W
R558	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R561	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R562	1-249-401-11	CARBON	47	5%	1/4W F
R563	1-216-662-11	METAL CHIP	3K	0.50%	1/10W

REF.NO.	PART NO.	DESCRIPTION		REMARK
R564	1-216-697-91	METAL CHIP	82K	0.50%1/10W
R565	1-216-671-11	METAL CHIP	6.8K	0.50%1/10W
R566	1-260-311-11	CARBON	39	5% 1/2W
R567	1-216-627-11	METAL CHIP	100	0.50%1/10W
R568	1-216-655-11	METAL CHIP	1.5K	0.50%1/10W
R571	1-216-381-11	METAL OXIDE	0.22	5% 3W F
R572	1-216-097-91	RES,CHIP	100K	5% 1/10W
R573	1-216-097-91	RES,CHIP	100K	5% 1/10W
R574	1-216-097-91	RES,CHIP	100K	5% 1/10W
R575	1-216-097-91	RES,CHIP	100K	5% 1/10W
R576	1-216-097-91	RES,CHIP	100K	5% 1/10W
R577	1-216-057-00	RES,CHIP	2.2K	5% 1/10W
R578	1-216-025-91	RES,CHIP	100	5% 1/10W
R579	1-216-672-11	METAL CHIP	7.5K	0.50%1/10W
R580	1-216-073-00	RES,CHIP	10K	5% 1/10W
R581	1-216-073-00	RES,CHIP	10K	5% 1/10W
R582	1-216-073-00	RES,CHIP	10K	5% 1/10W
R583	1-216-677-11	METAL CHIP	12K	0.50%1/10W
R584	1-216-081-00	RES,CHIP	22K	5% 1/10W
R585	1-216-081-00	RES,CHIP	22K	5% 1/10W
R586	1-216-049-91	RES,CHIP	1K	5% 1/10W
R587	1-216-049-91	RES,CHIP	1K	5% 1/10W
R588	1-216-097-91	RES,CHIP	100K	5% 1/10W
R589	1-216-097-91	RES,CHIP	100K	5% 1/10W
R590	1-216-675-11	METAL CHIP	10K	0.50%1/10W
R591	1-216-675-11	METAL CHIP	10K	0.50%1/10W
R594	1-249-437-11	CARBON	47K	5% 1/4W
R595	1-249-437-11	CARBON	47K	5% 1/4W
R596	1-216-683-11	METAL CHIP	22K	0.50%1/10W
R663	1-215-482-00	METAL	360K	1% 1/4W
R664	1-215-459-00	METAL	39K	1% 1/4W
R665	1-216-049-91	RES,CHIP	1K	5% 1/10W
R667	1-216-041-00	RES,CHIP	470	5% 1/10W
R669	1-216-671-11	METAL CHIP	6.8K	0.50%1/10W
R701	1-249-383-11	CARBON	1.5	5% 1/4W F
R702	1-216-057-00	RES,CHIP	2.2K	5% 1/10W
R703	1-216-085-00	RES,CHIP	33K	5% 1/10W
R704	1-249-383-11	CARBON	1.5	5% 1/4W F
R705	1-249-385-11	CARBON	2.2	5% 1/4W
R706	1-216-093-00	RES,CHIP	68K	5% 1/10W
R707	1-249-421-11	CARBON	2.2K	5% 1/4W
R708	1-216-073-00	RES,CHIP	10K	5% 1/10W
R709	1-216-473-11	METAL OXIDE	56	5% 3W F
R710	1-216-073-00	RES,CHIP	10K	5% 1/10W
R715	1-216-077-00	RES,CHIP	15K	5% 1/10W
R719	1-249-383-11	CARBON	1.5	5% 1/4W F
R720	1-260-292-11	CARBON	1	5% 1/2W
R721	1-216-667-11	METAL CHIP	4.7K	0.50%1/10W
R722	1-216-691-11	METAL CHIP	47K	0.50%1/10W
R723	1-216-663-11	METAL CHIP	3.3K	0.50%1/10W
R724	1-214-798-21	METAL	1.8	1% 1/2W
R725	1-214-798-21	METAL	1.8	1% 1/2W
R726	1-216-675-11	METAL CHIP	10K	0.50%1/10W
R727	1-260-292-11	CARBON	1	5% 1/2W
R728	1-249-381-11	CARBON	1	5% 1/4W F
R729	1-215-865-11	METAL OXIDE	220	5% 1W F
R730	1-219-746-11	CARBON	1K	5% 1/2W
R731	1-216-073-00	RES,CHIP	10K	5% 1/10W
R732	1-216-073-00	RES,CHIP	10K	5% 1/10W
R733	1-219-746-11	CARBON	1K	5% 1/2W
R734	1-215-881-11	METAL OXIDE	15	5% 2W F
R737	1-249-377-11	CARBON	0.47	5% 1/4W F
R738	1-249-377-11	CARBON	0.47	5% 1/4W F
R739	1-249-413-11	CARBON	470	5% 1/4W F
R741	1-249-430-11	CARBON	12K	5% 1/4W
R742	1-249-419-11	CARBON	1.5K	5% 1/4W
R743	1-216-049-91	RES,CHIP	1K	5% 1/10W
R748	1-216-683-11	METAL CHIP	22K	0.50%1/10W
R749	1-216-049-91	RES,CHIP	1K	5% 1/10W
R750	1-216-057-00	RES,CHIP	2.2K	5% 1/10W
R751	1-216-065-91	RES,CHIP	4.7K	5% 1/10W
R752	1-216-083-00	RES,CHIP	27K	5% 1/10W
R753	1-219-720-11	METAL	10M	5% 1W
R754	1-219-754-11	CARBON	680K	5% 1/2W
R755	1-219-754-11	CARBON	680K	5% 1/2W
R756	1-220-824-11	CARBON	270K	5% 1/2W
R759	1-218-754-11	METAL CHIP	120K	0.50%1/10W
R776	1-216-049-91	RES,CHIP	1K	5% 1/10W
R777	1-216-681-11	METAL CHIP	18K	0.50%1/10W
R778	1-216-667-11	METAL CHIP	4.7K	0.50%1/10W
R779	1-216-049-91	RES,CHIP	1K	5% 1/10W
R784	1-216-081-00	RES,CHIP	22K	5% 1/10W
R900	1-216-399-00	METAL OXIDE	6.8	5% 3W F
R901	1-216-057-00	RES,CHIP	2.2K	5% 1/10W
R902	1-216-065-91	RES,CHIP	4.7K	5% 1/10W
R903	1-216-073-00	RES,CHIP	10K	5% 1/10W
R904	1-216-057-00	RES,CHIP	2.2K	5% 1/10W
R905	1-216-025-91	RES,CHIP	100	5% 1/10W
R906	1-216-065-91	RES,CHIP	4.7K	5% 1/10W
R907	1-216-025-91	RES,CHIP	100	5% 1/10W
R908	1-216-091-00	RES,CHIP	56K	5% 1/10W
R909	1-216-689-11	RES,CHIP	39K	5% 1/10W
R910	1-216-073-00	RES,CHIP	10K	5% 1/10W
R911	1-216-049-91	RES,CHIP	1K	5% 1/10W
R912	1-218-768-11	METAL CHIP	470K	0.50%1/10W
R913	1-219-748-11	CARBON	4.7K	5% 1/2W
R914	1-219-510-11	CARBON	470K	5% 1/2W
R915	1-249-437-11	CARBON	47K	5% 1/4W
R916	1-249-429-11	CARBON	10K	5% 1/4W
R917	1-216-073-00	RES,CHIP	10K	5% 1/10W
R918	1-216-097-91	RES,CHIP	100K	5% 1/10W
R919	1-216-025-91	RES,CHIP	100	5% 1/10W
R920	1-249-401-11	CARBON	47	5% 1/4W F
R921	1-216-668-11	METAL CHIP	5.1K	0.50%1/10W
R922	1-216-041-00	RES,CHIP	470	5% 1/10W
R923	1-216-675-11	METAL CHIP	10K	0.50%1/10W
R924	1-249-397-11	CARBON	22	5% 1/4W F
R925	1-216-653-11	METAL CHIP	1.2K	0.50%1/10W
R926	1-216-653-11	METAL CHIP	1.2K	0.50%1/10W
R927	1-216-073-00	RES,CHIP	10K	5% 1/10W
R928	1-216-667-11	METAL CHIP	4.7K	0.50%1/10W
R929	1-216-033-00	RES,CHIP	220	5% 1/10W

D H

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION			REMARK
R930	1-216-033-00	RES,CHIP	220	5%	1/10W
R933	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R934	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R937	1-219-727-11	METAL	68	5%	10W
R940	1-249-393-11	CARBON	10	5%	1/4W F
R941	1-216-073-00	RES,CHIP	10K	5%	1/10W
R980	1-216-049-91	RES,CHIP	1K	5%	1/10W
R981	1-216-025-91	RES,CHIP	100	5%	1/10W
R1001	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1003	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1004	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1005	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1006	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1007	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1009	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1011	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1012	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1013	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1014	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1015	1-216-295-91	SHORT	0		
R1016	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1017	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1020	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1021	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1022	1-216-295-91	SHORT	0		
R1023	1-216-295-91	SHORT	0		
R1024	1-216-295-91	SHORT	0		
R1025	1-249-389-11	CARBON	4.7	5%	1/4W F
R1026	1-249-389-11	CARBON	4.7	5%	1/4W F
R1027	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1028	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1501	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1502	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1503	1-216-125-00	RES,CHIP	1.5M	5%	1/10W
R1504	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1513	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1514	1-216-049-91	RES,CHIP	1K	5%	1/10W

<RELAY>

RY501	1-755-137-11	RELAY

<SPARK GAP>

SG701	1-519-422-11	GAP, SPARK
SG702	1-519-422-11	GAP, SPARK
SG901	1-517-499-21	GAP, SPARK

<TRANSFORMER>

T501	1-429-303-21	TRANSFORMER, FERRITE (HDT)
T502	1-416-401-11	COIL, CHOKE 5.0MH
T503	1-431-413-11	TRANSFORMER, FERRITE (HST)
T504	1-416-257-11	COIL, CHOKE (HCC) 2.0MH
T701	1-431-414-11	TRANSFORMER, FERRITE (DFT)
T901	1-416-402-11	COIL, CHOKE 500UH
T902⚠	X-4035-170-1	TRANSFORMER ASSY, FLYBACK (NX-4142//J1D4)

<THERMISTOR>

TH501	1-807-796-11	THERMISTOR
TH502	1-807-796-11	THERMISTOR

<CRYSTAL>

X001	1-567-781-61	VIBRATOR, CRYSTAL

****

* 8-933-283-00 H BOARD, COMPLETE
****

<CAPACITOR>

C805	1-124-589-11	ELECT	47MF	20%	16V
C811	1-124-589-11	ELECT	47MF	20%	16V

<CONNECTOR>

CN801	*1-564-526-11	PLUG, CONNECTOR 11P

<DIODE>

D820	8-719-064-11	DIODE SPR-325MVW

<TRANSISTOR>

Q801	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q802	8-729-119-78	TRANSISTOR 2SC2785-HFE

<RESISTOR>

R801	1-215-433-00	METAL	3.3K	1%	1/4W
R802	1-215-409-00	METAL	330	1%	1/4W
R803	1-215-409-00	METAL	330	1%	1/4W
R804	1-215-413-00	METAL	470	1%	1/4W
R805	1-215-413-00	METAL	470	1%	1/4W
R806	1-215-417-00	METAL	680	1%	1/4W
R807	1-215-421-00	METAL	1K	1%	1/4W
R808	1-215-421-00	METAL	1K	1%	1/4W
R809	1-215-429-00	METAL	2.2K	1%	1/4W
R810	1-215-433-00	METAL	3.3K	1%	1/4W
R814	1-249-429-11	CARBON	10K	5%	1/4W
R815	1-249-429-11	CARBON	10K	5%	1/4W
R818	1-215-445-00	METAL	10K	1%	1/4W
R819	1-249-441-11	CARBON	100K	5%	1/4W
R826	1-249-408-11	CARBON	180	5%	1/4W
R827	1-249-407-11	CARBON	150	5%	1/4W

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<SWITCH>	
S802	1-692-431-21	SWITCH, TACTILE (CONT+)	
S803	1-692-431-21	SWITCH, TACTILE (CONT-)	
S804	1-692-431-21	SWITCH, TACTILE (MENU)	
S805	1-692-431-21	SWITCH, TACTILE (BRT+)	
S806	1-692-431-21	SWITCH, TACTILE (BRT-)	
S818	1-692-431-21	SWITCH, TACTILE (ASC)	
S820	1-692-431-21	SWITCH, TACTILE (RESET)	
		<THERMISTOR>	
TH801	1-807-796-11	THERMISTOR	
**********			
*	8-933-279-00	J BOARD, COMPLETE	
		**********	
		<CONNECTOR>	
CN891*	1-691-961-11	PIN, CONNECTOR (PC BOARD) 2P	
		<SWITCH>	
S891	⚠1-571-433-31	SWITCH, PUSH (AC POWER)	
**********			
*	8-933-297-00	L BOARD, COMPLETE	
		**********	
		<CAPACITOR>	
C5002	1-126-964-11	ELECT 10MF 20% 50V	
C5003	1-126-933-11	ELECT 100MF 20% 16V	
C5004	1-104-664-11	ELECT 47MF 20% 25V	
C5005	1-104-664-11	ELECT 47MF 20% 25V	
C5008	1-104-664-11	ELECT 47MF 20% 25V	
C5009	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5101	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5103	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5104	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5105	1-104-664-11	ELECT 47MF 20% 25V	
C5106	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5107	1-130-495-00	FILM 0.1MF 5% 50V	
C5108	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5109	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5110	1-104-664-11	ELECT 47MF 20% 25V	
C5111	1-130-495-00	FILM 0.1MF 5% 50V	
C5201	1-104-664-11	ELECT 47MF 20% 25V	
C5202	1-104-664-11	ELECT 47MF 20% 25V	
C5203	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5204	1-130-495-00	FILM 0.1MF 5% 50V	
C5205	1-164-489-11	CERAMIC CHIP 0.22MF 10% 16V	
C5206	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5301	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5303	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5304	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5305	1-104-664-11	ELECT 47MF 20% 25V	
C5306	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5307	1-130-495-00	FILM 0.1MF 5% 50V	
C5308	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5309	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5310	1-104-664-11	ELECT 47MF 20% 25V	
C5311	1-130-495-00	FILM 0.1MF 5% 50V	
C5401	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5403	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C5404	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5405	1-104-664-11	ELECT 47MF 20% 25V	
C5406	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5407	1-130-495-00	FILM 0.1MF 5% 50V	
C5408	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C5409	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5410	1-104-664-11	ELECT 47MF 20% 25V	
C5412	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C5501	1-126-934-11	ELECT 220MF 20% 10V	
		<CONNECTOR>	
CN5001*	1-564-512-11	PLUG, CONNECTOR 9P	
CN5002*	1-564-509-11	PLUG, CONNECTOR 6P	
CN5003	1-564-513-11	PLUG, CONNECTOR 10P	
CN5004*	1-564-507-11	PLUG, CONNECTOR 4P	
		<DIODE>	
D5002	8-719-801-78	DIODE 1SS184	
D5101	8-719-800-76	DIODE 1SS226	
D5103	8-719-800-76	DIODE 1SS226	
D5201	8-719-800-76	DIODE 1SS226	
D5301	8-719-800-76	DIODE 1SS226	
D5303	8-719-800-76	DIODE 1SS226	
D5401	8-719-800-76	DIODE 1SS226	
D5403	8-719-800-76	DIODE 1SS226	
D5501	8-719-976-96	ZENER DIODE DTZ4.7C	
		<SENSOR>	
GS50011	475-592-11	SENSOR UNIT, MAGNETIC	
		<IC>	
IC5101	8-759-822-38	IC LA6510	
IC5201	8-759-803-42	IC LA6500-FA	
IC5301	8-759-822-38	IC LA6510	
IC5401	8-759-822-38	IC LA6510	
		<RESISTOR>	
R5001	1-249-383-11	CARBON 1.5 5% 1/4W F	

L

REF.NO.	PART NO.	DESCRIPTION			REMARK
R5003	1-216-295-91	SHORT	0		
R5005	1-216-689-11	RES,CHIP	39K	5%	1/10W
R5006	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5007	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5008	1-216-295-91	SHORT	0		
R5009	1-216-295-91	SHORT	0		
R5010	1-216-295-91	SHORT	0		
R5011	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5012	1-216-295-91	SHORT	0		
R5013	1-216-295-91	SHORT	0		
R5015	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5101	1-249-383-11	CARBON	1.5	5%	1/4W F
R5102	1-249-383-11	CARBON	1.5	5%	1/4W F
R5108	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5109	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5110	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5111	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5112	1-249-383-11	CARBON	1.5	5%	1/4W F
R5113	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5114	1-249-441-11	CARBON	100K	5%	1/4W F
R5115	1-215-882-00	METAL OXIDE	22	5%	2W F
R5116	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5117	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5119	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5120	1-249-383-11	CARBON	1.5	5%	1/4W F
R5121	1-249-441-11	CARBON	100K	5%	1/4W F
R5122	1-215-882-00	METAL OXIDE	22	5%	2W F
R5201	1-249-383-11	CARBON	1.5	5%	1/4W F
R5202	1-249-383-11	CARBON	1.5	5%	1/4W F
R5203	1-249-383-11	CARBON	1.5	5%	1/4W F
R5204	1-249-441-11	CARBON	100K	5%	1/4W F
R5205	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5206	1-215-859-00	METAL OXIDE	22	5%	1W F
R5207	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5208	1-216-670-11	METAL CHIP	6.2K	0.50%	1/10W
R5301	1-249-383-11	CARBON	1.5	5%	1/4W F
R5302	1-249-383-11	CARBON	1.5	5%	1/4W F
R5308	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5309	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5310	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5311	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5312	1-249-383-11	CARBON	1.5	5%	1/4W F
R5313	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5314	1-249-441-11	CARBON	100K	5%	1/4W F
R5315	1-215-882-00	METAL OXIDE	22	5%	2W F
R5316	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5317	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5319	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5320	1-249-383-11	CARBON	1.5	5%	1/4W F
R5321	1-249-441-11	CARBON	100K	5%	1/4W F
R5322	1-215-882-00	METAL OXIDE	22	5%	2W F
R5401	1-249-383-11	CARBON	1.5	5%	1/4W F
R5402	1-249-383-11	CARBON	1.5	5%	1/4W F
R5406	1-216-689-11	RES,CHIP	39K	5%	1/10W
R5407	1-216-079-00	RES,CHIP	18K	5%	1/10W
R5408	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5409	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5410	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5411	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5412	1-249-383-11	CARBON	1.5	5%	1/4W F
R5413	1-216-097-91	RES,CHIP	100K	5%	1/10W
R5414	1-249-441-11	CARBON	100K	5%	1/4W F
R5415	1-215-886-11	METAL OXIDE	100	5%	2W F
R5416	1-216-077-00	RES,CHIP	15K	5%	1/10W
R5417	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R5419	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5420	1-249-383-11	CARBON	1.5	5%	1/4W F
R5421	1-249-441-11	CARBON	100K	5%	1/4W F
R5422	1-215-885-00	METAL OXIDE	68	5%	2W F
R5423	1-216-105-91	RES,CHIP	220K	5%	1/10W
R5501	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5502	1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R5503	1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R5504	1-216-093-00	RES,CHIP	68K	5%	1/10W
R5505	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R5506	1-216-670-11	METAL CHIP	6.2K	0.50%	1/10W

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